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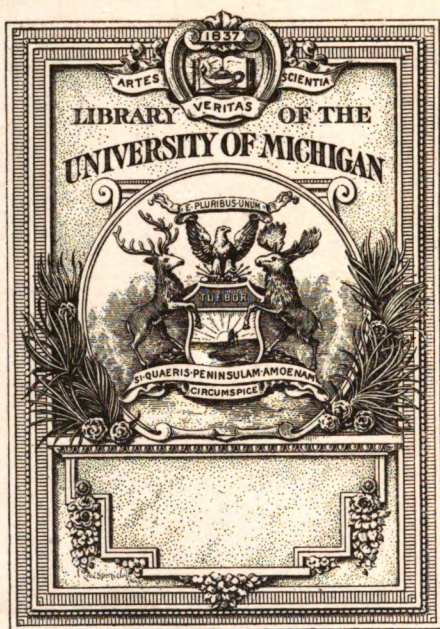
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TRANSACTIONS
OF THE
PATHOLOGICAL SOCIETY
OF PHILADELPHIA.

VOLUME SIXTH.

**CONTAINING THE REPORT OF THE PROCEEDINGS FOR THE SESSION FROM
SEPTEMBER, 1875, TO JULY, 1876.**

EDITED BY

JAMES TYSON, M.D.,

**PROFESSOR OF GENERAL PATHOLOGY AND MORBID ANATOMY IN THE UNIVERSITY OF
PENNSYLVANIA, ETC., RECORDER OF THE SOCIETY.**

PHILADELPHIA:
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THE present volume includes the Transactions of the Society for the session 1875-6,—that is, from September, 1875, to June, 1876, inclusive; and, although containing less matter than some of its predecessors, covers a shorter period. It is, however, the time which subsequent volumes, if issued annually, will include, as there are no meetings during July and August.

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Former Presidents.

SAMUEL D. GROSS, M.D., LL.D. Oxon., elected 1857.

RENÉ LA ROCHE, M.D., elected 1858.

ALFRED STILLÉ, M.D., elected 1859-61-62 and '63.

EDWARD HARTSHORNE, M.D., elected 1863.

J. M. DA COSTA, M.D., elected 1864, '65 and '66.

JOHN H. PACKARD, M.D., elected 1867 and '68.

S. WEIR MITCHELL, M.D., elected 1869.

JOHN ASHHURST, JR., M.D., elected 1870.

JAMES H. HUTCHINSON, M.D., elected 1871 and '72.

WILLIAM PEPPER, M.D., elected 1873.

H. LENOX HODGE, M.D., elected 1876.

OFFICERS AND COMMITTEES
OF THE
Pathological Society of Philadelphia.

President.

H. LENOX HODGE, M.D.,

ELECTED OCTOBER, 1876, FOR THREE YEARS.

ELECTED AT THE ANNUAL MEETING, OCTOBER, 1876.

Vice-Presidents.

HARRISON ALLEN, M.D.,

W. F. NORRIS, M.D.,

R. M. BERTOLET, M.D.,

J. EWING MEARS, M.D.

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LOUIS STARR, M.D.

Treasurer.

FRED. P. HENRY, M.D.

Recorder.

JAMES TYSON, M.D.

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JAS. C. WILSON, M.D.

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MORRIS LONGSTRETH, M.D.,

FRED. P. HENRY, M.D. (ex officio).

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J. C. WILSON, M.D.,

J. H. C. SIMES, M.D.,

LOUIS STARR, M.D.

LIST OF MEMBERS.

Members marked N. R. are non-resident.

Members marked O. M. are of those originating the Society.

Elected

- 1876 ABEL, F. T., Philadelphia Hospital.
1857 AGNEW, D. HAYES, Professor of Surgery in the University of Pennsylvania, 1611 Chestnut Street. (O. M.)
1871 ALISON, ROBERT H., 218 South Fifteenth Street.
1864 ALLEN, HARRISON, Professor of Comparative Anatomy in the University of Pennsylvania, 117 South Twentieth Street.
1869 ALLIS, OSCAR H., one of the Surgeons to the Presbyterian Hospital, 1328 Spruce Street.
1865 ANDREWS, THOMAS H., Demonstrator of Anatomy in the Jefferson Medical College, 1117 Spruce Street.
1871 ASHBRIDGE, WM., Surgeon to the German Hospital, 1702 Chestnut St.
1867 ASHHURST, FRANCIS, Mount Holly, N. J. (N. R.)
1861 ASHHURST, JOHN, JR., one of the Surgeons to the Episcopal Hospital, 2000 West De Lancey Place.
1863 ASHHURST, SAMUEL, one of the Surgeons to the Episcopal Hospital, 1423 Walnut Street.
1871 ATLEE, WASHINGTON L., JR.*

1866 BACHE, T. HEWSON, 233 South Thirteenth Street.
1876 BARR, J. W., 804 South Tenth Street.
1867 BARTLES, WILLIAM H., Insane Department Pennsylvania Hospital, West Philadelphia. (N. R.)
1869 BARTON, J. M., 201 South Eleventh Street.
1873 BEECHER, A. C. W., 225 South Seventeenth Street.
1870 BELL, J. R. F.*
1871 BENNETT, WM. H., 332 South Fifteenth Street.
1863 BENTON, C. H. (N. R.)
1875 BERNARDY, EUGENE P., 221 South Seventeenth Street.
1870 BERTOLET, ROBERT MORRIS, Pathologist to the Philadelphia Hospital.
1871 BETTS, THOMAS, Branchtown, Pa. (N. R.)
1860 BISHOP, C. S., died —.
1866 BLACK, J. J., Newcastle, Delaware.

Elected

- 1863 BOARDMAN, C. H., St. Paul, Minnesota. (N. R.)
- 1857 BOKER, CHARLES S., one of the Surgeons to the St. Joseph's Hospital,
1622 Chestnut Street. (O. M.)
- 1868 BOLLES, LUCIUS S., died August 15th, 1873.
- 1873 BRAY, DANIEL, Lecturer on Operative Obstetrics in the University of
Pennsylvania, 1619 Vine Street.
- 1876 BREWSTER, W. B., southeast corner Third and Christian Streets.
- 1857 BRINTON, JOHN H., one of the Surgeons to the Philadelphia Hospital,
1423 Spruce Street. (O. M.)
- 1874 BRUBAKER, A. P., 217 North Seventeenth Street.
- 1874 BRUEN, EDWARD T., one of the Visiting Physicians to the Philadel-
phia Hospital, 1531 Chestnut Street.
- 1871 BUCK, WILLIAM PENN, resigned October 23d, 1873.
- 1867 BURNETT, C. H., Aural Surgeon to the Presbyterian Hospital, 127
South Eighteenth Street.
- 1872 CATHCART, JAMES H., died March 5th, 1874.
- 1871 CHESTON, C. MORRIS, West River, Maryland. (N. R.)
- 1865 CHESTON, D. MURRAY, one of the Physicians to the Children's Hos-
pital, 25 South Sixteenth Street.
- 1871 CLARK, LEONARDO S., 1505 Girard Avenue.
- 1866 CLEEMANN, RICHARD A., one of the Physicians to the St. Mary's Hos-
pital, 340 South Twenty-first Street.
- 1872 COHEN, J. SOLIS, 1431 Walnut Street.
- 1869 CORBIT, WILLIAM B., Washington, D. C. (N. R.)
- 1871 CURTIN, ROLAND G., Lecturer on Physical Diagnosis in the University
of Pennsylvania, 332 South Seventeenth Street.
- 1857 DA COSTA, J. M., Professor of Theory and Practice of Medicine in
the Jefferson Medical College, 1700 Walnut Street. (O. M.)
- 1859 DARBY, JOHN T., New York City. (N. R.)
- 1876 DARLINGTON, W. L., 1518 Columbia Avenue.
- 1857 DARRACH, JAMES, 5094 Green Street, Germantown. (O. M.)
- 1868 DARRACH, WILLIAM, 42 Queen Street, Germantown.
- 1870 DEAL, LEMUEL J.*
- 1866 DUER, EDWARD L., one of the Obstetricians to the Philadelphia Hos-
pital, 1704 Arch Street.
- 1870 DUHRING, L. A., Clinical Professor of Dermatology in the University
of Pennsylvania, 1416 Spruce Street.
- 1876 DULLES, C. W., Philadelphia Hospital.
- 1860 DUNTON, W. R., 5059 Germantown Avenue, Germantown.
- 1863 DYER, EZRA, Pittsburg, Pennsylvania. (N. R.)
- 1875 ENGEL, HUGO, northeast corner Fifth and Wood Streets.
- 1876 ESKRIDGE, J. E., 1614 North Sixteenth Street.

VIII

Elected

- 1857 FISCHER, EMIL, southeast corner Sixth and Brown Streets. (O. M.)
- 1863 FISH, AUGUSTINE H., died August 3d, 1872.
- 1876 FISHER, HENRY, 919 Walnut Street.
- 1857 FORBES, WILLIAM S., one of the Surgeons to the Episcopal Hospital, 1405 Locust Street. (O. M.)
- 1869 FORD, WILLIAM H., 1622 Summer Street.
- 1871 FOX, CHARLES, resigned December 10th, 1874.
- 1868 GARRETSON, JAMES E., 1537 Chestnut Street.
- 1871 GERHARD, GEORGE S., Pathologist to the Presbyterian Hospital, 1823 Spruce Street.
- 1870 GETCHELL, FRANK H., Clinical Lecturer on Diseases of Women in the Jefferson Medical College, 1432 Spruce Street.
- 1866 GOODELL, WILLIAM, Clinical Professor of Diseases of Women in the University of Pennsylvania, Preston Retreat, Twentieth and Hamilton Streets.
- 1868 GOODMAN, H. EARNEST, one of the Surgeons to the Orthopædic Hospital, 1427 Chestnut Street.
- 1876 GORGAS, S. R., 716 North Broad Street.
- 1868 GRAHAM, JAMES, 1342 Pine Street.
- 1867 GRIER, MATTHEW J., 1531 Spruce Street.
- 1868 GROSS, FERDINAND H., one of the Surgeons to the German Hospital, 608 North Sixth Street.
- 1857 GROSS, SAMUEL D., Professor of Surgery in the Jefferson Medical College, southeast corner Eleventh and Walnut Streets. (O. M.)
- 1858 GROSS, SAMUEL W., one of the Visiting Surgeons to the Philadelphia Hospital, 1112 Walnut Street.
- 1869 GROVE, JOHN H., one of the Surgeons to the St. Mary's Hospital, 1330 Arch Street.
- 1872 GRUEL, THEODORE H. E., 519 Spruce Street.
- 1874 GUITÉRAS, JOHN, one of the Visiting Physicians to the Philadelphia Hospital, 1912 Vine Street.
- 1871 HALE, GEORGE J.*
- 1857 HALL, A. DOUGLASS, resigned October 9th, 1873. (O. M.)
- 1875 HAND, FRANK C., 830 Pine Street.
- 1866 HARE, HORACE BINNEY, Professor of Hygiene in the University of Pennsylvania, 120 South Twenty-second Street.
- 1868 HARGADINE, R. W. (N. R.)
- 1859 HARLAN, GEORGE C., one of the Surgeons to the Wills Ophthalmic Hospital, 1806 Chestnut Street.
- 1874 HARRIS, CHARLES M., 715 South Twenty-third Street.
- 1858 HARRIS, ROBERT P., resigned January 9th, 1873.
- 1857 HARTSHORNE, EDWARD, 1601 Walnut Street. (O. M.)

Elected

- 1859 HARTSHORNE, HENRY, resigned October 12th, 1864.
 1867 HASSLER, FERDINAND A., resigned February 9th, 1871.
 1869 HATFIELD, NATHAN L., one of the Visiting Surgeons to the Philadelphia Hospital, 501 Franklin Street.
 1868 HAYS, I. MINIS, 1607 Locust Street.
 1873 HEARN, JOSEPH, 324 Catharine Street.
 1870 HENRY, FREDERICK P., one of the Physicians to the Episcopal Hospital, 635 Spruce Street.
 1866 HERBERT, THEODORE. (N. R.)
 1857 HEWSON, ADDINELL, one of the Surgeons to the Pennsylvania Hospital, northeast corner Twenty-first and Walnut Streets. (O. M.)
 1874 HICKMAN, N., 326 South Sixteenth Street.
 1858 HODGE, H. LENOX, one of the Surgeons to the Presbyterian Hospital, 506 South Broad Street.
 1871 HOFFMAN, WASHINGTON ATLEE, died September 20th, 1874.
 1860 HOPKINS, HENRY ST. GEORGE. (N. R.)
 1876 HOPKINS, W. B., Pennsylvania Hospital.
 1870 HOUSTON, JAMES P. S., Savannah, Georgia. (N. R.)
 1866 HOWE, HERBERT M., 1606 Locust Street.
 1859 HOYT, WILLIAM D. (N. R.)
 1857 HUMPHRIES, GEORGE H., New York City. (O. M. N. R.)
 1868 HUNTER, CHARLES T., Demonstrator of Surgery in the University of Pennsylvania, 1905 Walnut Street.
 1870 HUTCHINS, E. R. (N. R.)
 1858 HUTCHINSON, JAMES H., one of the Physicians to the Pennsylvania Hospital, 2019 Walnut Street.

 1866 INGHAM, JAMES V., one of the Obstetricians to the State Hospital for Women, 1342 Spruce Street.
 1876 INGRAM, T. D., 1601 Vine Street.

 1874 JAMESON, EDWARD, St. Louis, Mo. (N. R.)
 1866 JENKS, WILLIAM F., Surgeon to the State Hospital for Women. (N. R.)
 1875 JOHNSON, RUSSELL H., one of the Assistant Physicians to the Children's Hospital, 316 South Fifteenth Street.

 1859 KANE, JOHN K., Wilmington, Delaware. (N. R.)
 1874 KEATING, JOHN M., one of the Visiting Physicians to the Philadelphia Hospital, northwest corner Twenty-second and Locust Streets.
 1857 KEATING, WILLIAM V. (O. M.)*
 1866 KEEN, WILLIAM W., one of the Surgeons to the St. Mary's Hospital, 1729 Chestnut Street.
 1857 KELLER, WILLIAM, resigned January 28th, 1875. (O. M.)

Elected

- 1875 KELLY, JOSEPH V., 4257 Main Street, Manayunk.
 1858 KING, WILLIAM, United States Navy. (N. R.)
 1869 KNIGHT, SAMUEL R., Superintendent of the Episcopal Hospital.
- 1867 LAMBDIN, ALFRED C.*
 1871 LANDIS, HENRY G., Niles, Ohio. (N. R.)
 1872 LA ROCHE, C. PERCY, Nice, France. (N. R.)
 1857 LA ROCHE, RENÉ, resigned October 12th, 1871. (O. M.) Died December 9th, 1872.
 1870 LEACH, ALONZO L., 2118 Spruce Street.
 1869 LEAMAN, HENRY, 1031 Vine Street.
 1860 LEE, CHARLES C., New York City. (N. R.)
 1861 LEEDOM, JOHN M., Pulaski Avenue, Germantown.
 1857 LEVICK, JAMES J., resigned October 13th, 1861. (O. M.)
 1868 LEWIS, FRANCIS W., 2016 Spruce Street.
 1869 LEWIS, FRED. W., died 1873.
 1875 LEWIS, J. MORRIS, 1216 Walnut Street.
 1857 LEWIS, SAMUEL, 1330 Spruce Street. (O. M.)
 1859 LIVEZY, EDWARD,* died 1876.
 1876 LODER, P. E., Philadelphia Hospital.
 1873 LONGENECKER, JEROME.
 1870 LONGSTRETH, MORRIS, Pathologist to the Pennsylvania Hospital, 333 South Twelfth Street.
 1870 LOUGHLIN, J. ENEU, 632 Christian Street.
- 1874 MANN, CHARLES H. (N. R.)
 1867 MARKOE, JAMES.
 1868 MARTIN, GEO. (N. R.)
 1874 MATTESON, CHARLES C., died.
 1865 MAURY, FRANK F., one of the Surgeons to the Philadelphia Hospital, 1218 Walnut Street.
 1870 MAXWELL, J. GORDON.*
 1866 McARTHUR, JOHN A., 406 South Broad Street.
 1861 MCCALL, C. A., resigned.
 1868 McCCLURE, W. WALLACE, one of the Surgeons to the Wills Ophthalmic Hospital, 21 South Sixteenth Street.
 1873 MCCOY, A. W., Pittsburg, Pa. (N. R.)
 1864 MEARS, J. EWING, one of the Surgeons to the St. Mary's Hospital, 1429 Walnut Street.
 1873 MEIGS, ARTHUR V., Assistant Physician to the Children's Hospital, 1208 Walnut Street.
 1857 MEIGS, JOHN FORSYTH, one of the Physicians to the Pennsylvania Hospital, 1208 Walnut Street. (O. M.)
 1874 MILLER, C. K. I., resigned December 28th, 1876.
 1857 MITCHELL, S. WEIR, one of the Physicians to the Hospital for Nervous Diseases, 1524 Walnut Street. (O. M.)

Elected

1876 MONTGOMERY, E. C., southeast corner of Twentieth and Jefferson Streets.

1857 MOREHOUSE, GEORGE R., 227 South Ninth Street.

1857 MORTON, THOMAS GEORGE. (O. M.*)

1859 MOSS, WILLIAM, Chestnut Avenue, Chestnut Hill.

1871 MUHLENBERG, FRANK, 1912 Chestnut Street.

1869 MÜLLER, AUGUST F., 4544 Germantown Avenue.

1873 MUSSER, MILTON B., Fortieth and Locust Streets.

1869 MUSTIN, J. BURTON, died 1871.

1869 NANCREDE, CHARLES B., Senior Assistant Surgeon to the Episcopal Hospital, 2109 Pine Street.

1872 NEWSHAM, STANLEY P., 1507 South Fifth Street.

1868 NORRIS, HERBERT, 313 South Eighteenth Street.

1868 NORRIS, ISAAC, resigned November 12th, 1874.

1869 NORRIS, J. C., resigned February 10th, 1876.

1861 NORRIS, WILLIAM F., Clinical Professor of Ophthalmology in the University of Pennsylvania, 1532 Locust Street.

1875 O'HARA, MICHAEL, 31 South Sixteenth Street.

1874 OSGOOD, HAMILTON, 1839 Chestnut Street.

1857 PACKARD, JOHN H., one of the Surgeons to the Episcopal Hospital, 1928 Spruce Street. (O. M.)

1868 PANCOAST, WILLIAM H., Professor of Anatomy in the Jefferson Medical College, 1100 Walnut Street.

1873 PARISH, WILLIAM H., 324 South Seventeenth Street.

1875 PARKS, EDWARD L. (N. R.)

1867 PARRY, JOHN S., died 1876.

1870 PAUL, COMEGYS, Assistant Physician to the Children's Hospital, 326 South Seventeenth Street.

1875 PAUL, JAMES, 1608 Walnut Street.

1857 PENROSE, R. A. F. (O. M.*)

1865 PEPPER, GEORGE, died September 14th, 1872.

1865 PEPPER, WILLIAM, Clinical Professor of Medicine in the University of Pennsylvania, 1811 Spruce Street.

1870 PORTER, WILLIAM G., JR., one of the Surgeons to the Presbyterian Hospital, 314 South Eleventh Street.

1874 REED, HENRY B., 2302 De Lancey Place.

1859 REED, THOMAS B., one of the Surgeons to the Presbyterian Hospital, 1427 Walnut Street.

1871 REX, GEORGE A., 2118 Pine Street.

Elected

- 1869 REX, OLIVER P.*
 1864 RHODES, EDWARD, died January 16th, 1871.
 1869 RICHARDSON, ELLIOTT, Lecturer on Practical Obstetrics in the University of Pennsylvania, 737 Spruce Street.
 1863 RICHARDSON, JOSEPH G., one of the Visiting Physicians to the Presbyterian Hospital, 1835 Chestnut Street.
 1857 RICHARDSON, T. G., New Orleans, La. (O. M. N. R.)
 1876 RISLEY, S. D., Lecturer on Ophthalmoscopy in the University of Pennsylvania, 112 South Seventeenth Street.
 1868 RITZ, CHARLES M. (N. R.)
 1876 ROBERTS, J. B., 1118 Arch Street.
 1876 ROLAND, O., Episcopal Hospital.
 1874 RONALDSON, WM. D., 4017 Locust Street.
 1876 RUSH, W. H.

 1867 SANTEE, EUGENE J., 532 North Sixth Street.
 1863 SAVERY, WM., Bryn Mawr, Pennsylvania, resigned February 11th, 1869.
 1869 SCHELL, H. S., 1004 Vine Street.
 1874 SEILER, CARL, 1608 Pine Street.
 1870 SEYFERT, THEODORE H., 1813 Columbia Avenue.
 1870 SHAFFNER, CHARLES, 2042 Vine Street.
 1876 SHAKESPEARE, E. O., Lecturer on Refraction and Accommodation and Operative Ophthalmic Surgery in the University of Pennsylvania, 1344 Spruce Street.
 1869 SHAPLEIGH, ELISHA B., 658 North Eighth Street.
 1868 SHERWOOD, THOMAS H.*
 1871 SIMES, J. H. C., Lecturer on Histology in the University of Pennsylvania, 2033 Chestnut Street.
 1868 SINKLER, WHARTON, one of the Physicians to the Hospital for Nervous Diseases, 1534 Pine Street.
 1858 SMITH, A. H., Lecturer on Obstetrics at the Philadelphia Lying-in Charity, 1419 Walnut Street.
 1863 SMITH, E. A., 126 South Eighteenth Street.
 1859 SMITH, F. G., resigned November 13th, 1873.
 1876 SMITH, R. M., Episcopal Hospital.
 1875 SMITH, STANLEY, Lecturer on Physical Diagnosis in Jefferson Medical College, 224 South Sixteenth Street.
 1876 SMYTH, F. G., 1212 South Tenth Street.
 1871 SPARKS, GEO. W.*
 1866 SPOONER, EDWARD A.*
 1871 STARR, LOUIS, one of the Physicians to the Episcopal Hospital, 1417 Spruce Street.

XIII

Elected

- 1857 STILLÉ, ALFRED, Professor of Theory and Practice of Medicine in the University of Pennsylvania, 3900 Spruce Street. (O. M.)
- 1870 STRAWBRIDGE, GEORGE, 1616 Chestnut Street, resigned June 10th, 1875.
- 1869 STRYKER, SAMUEL S., 3713 Walnut Street.
- 1866 THOMAS, CHARLES H., 41 North Twelfth Street.
- 1868 THOMSON, WILLIAM, one of the Surgeons to the Wills Ophthalmic Hospital, 1502 Locust Street.
- 1870 TINKHAM, J. H., United States Navy. (N. R.)
- 1866 TOWNSEND, GEORGE D. (N. R.)
- 1868 TOWNSEND, R. M. (N. R.)
- 1864 TURNER, A. P. (N. R.)
- 1863 TUTT, CHARLES PENDLETON, died May 11th, 1866.
- 1863 TYSON, JAMES, Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, 1506 Spruce Street.
- 1871 VALDIVIESO, R. (N. R.)
- 1870 VAN HARLINGEN, ARTHUR, Chief of the Dispensary for Diseases of the Skin, Hospital of the University of Pennsylvania, 129 South Fifteenth Street.
- 1874 WARDER, WM. H., one of the Obstetricians to the Philadelphia Hospital, 810 North Broad Street.
- 1867 WATSON, E. W., 146 North Twentieth Street.
- 1866 WEIGHTMAN, JOHN F., resigned April 27th, 1871.
- 1876 WEIR, A. H., 130 South Fifteenth Street.
- 1875 WEST, FRANKLIN, 1722 Girard Avenue.
- 1875 WHELAN, ALFRED, Senior Assistant Physician to the Philadelphia Lying-in Charity, 1814 Locust Street.
- 1873 WHITE, J. WILLIAM, one of the Visiting Surgeons to the Philadelphia Hospital, 222 South Sixteenth Street.
- 1868 WILLARD, DE FORREST, Lecturer on Orthopædic Surgery in the University of Pennsylvania, 113 South Sixteenth Street.
- 1865 WILLIAMS, HORACE, one of the Obstetricians to the State Hospital for Women, 1717 Pine Street.
- 1875 WILLIAMSON, JESSE, 1711 Pine Street.
- 1867 WILSON, ELLWOOD, 212 South Fifteenth Street, resigned.
- 1869 WILSON, JAMES C., one of the Visiting Physicians to the Philadelphia Hospital, 214 South Fifteenth Street.
- 1867 WILSON, JAMES F., 826 Arch Street.
- 1869 WILSON, J. H. (N. R.)
- 1873 WINSLOW, W. H., resigned December 28th, 1876.

XIV

Elected

- 1864 WISTAR, THOMAS, resigned February 13th, 1867.
1875 WOLFORD, W. S., 110 South Thirteenth Street.
1863 WOOD, HORATIO C., JR.*
1865 WOODS, D. FLAVEL, one of the Physicians to the Presbyterian Hospital, 151 North Fifteenth Street.
1857 WOODWARD, J. J., United States Army, Washington, D. C. (O.M.N.R.)
1872 WORTHINGTON, DAVID J., 116 South Fifteenth Street.

1876 ZEIGLER, G. W., Wills Hospital.

Members marked * have forfeited their membership.

CORRESPONDING MEMBERS.

- 1866 BUMSTEAD, FREEMAN J., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York.
1859 CLARK, ALONZO, Professor of Theory and Practice of Medicine in the College of Physicians and Surgeons, New York.
1859 DALTON, J. C., Professor of Physiology in the College of Physicians and Surgeons, New York.
1860 ELLIS, CALVIN, Professor of Theory and Practice of Medicine in the Medical Department of Harvard University, Boston, Massachusetts.
1858 FLINT, AUSTIN, SR., Professor of Theory and Practice of Medicine in Bellevue Hospital Medical College, New York.
1858 HAMMOND, WILLIAM A., Member of the National Academy of Sciences, New York:
1860 ISAACS, CHARLES E., Brooklyn. Died June 16th, 1860, æt. 48.
1860 REEVES, JAMES E., Wheeling, West Virginia.
1861 ROKITANSKY, CARL, Professor of Pathological Anatomy in the University of Vienna.
1860 WATSON, JOHN, New York. Died June 3d, 1863, æt. 56.
1859 WORTHINGTON, WILMER, West Chester, Pennsylvania. Died 1873.

LIST OF SPECIMENS.

I.—THE OSSEOUS SYSTEM.

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ADDRESS OF THE RETIRING PRESIDENT,

WILLIAM PEPPER, A.M., M.D.,

Delivered October 12th, 1876.

IN accordance with a recently established custom, it becomes my most agreeable duty, retiring from the presidential chair, to present to the members in attendance some remarks upon the state of this Society, in whose welfare we are all so deeply interested.

It has been my privilege to preside over your meetings for a period of three years, having been the first officer chosen under the rule of 1873, which provided that thereafter the President should be elected for a period of three years. It would ill become me to allude to the advantages which it was hoped would result from this change in the term of office of the President of this body; and indeed it is evident that the experiment has not been tried for a sufficient length of time to enable a fair estimate to be made of its influence upon the activity and general interests of the Society. For myself, I can merely say that, although at times unavoidably prevented from being at the meetings, they have always been to me occasions of unalloyed satisfaction mixed with much solid improvement. That this has been so, despite the many shortcomings of which I have been too often conscious in the discharge of the duties of my position, has been chiefly due to the unvarying kindness and courtesy which has been extended to me, and for which I now desire to express my earnest thanks.

If the strictly parliamentary duties of the presiding officer of this Society are light, on account of the admirable spirit which pervades our body, there is another aspect from which his duties must appear difficult and responsible. I think that all present will agree with me that if this Society is to fully discharge its functions to the profession and to science, one of the most important parts of its work consists in the encouragement to cultivation of free and accurate expression of opinion on the part of all its members. The exhibition of specimens accompanied by the carefully prepared reports which are now so generally submitted is, it is true, a most

instructive practice for the exhibitor; and, of course, forms the indispensable basis of the work of the Society. But the number of those who come into the possession of pathological specimens of sufficient interest to induce them to present them here is comparatively limited; and the study of pathology, which is encouraged by the presentation of specimens to the elaboration of careful reports to accompany them, is correspondingly limited. Doubtless even this would be far more extensive if the members of our Society could be induced, one and all, to feel the importance of taking an active part in our proceedings, and of placing on record not only the most rare specimens they meet with, but also those of much more common occurrence, and which possess on that very account a high degree of practical value. But if it can be brought about that a large proportion of our members shall participate in the discussions which now arise occasionally, but which should be so much more frequent, it is evident that a widespread desire for accurate pathological knowledge, a close familiarity with the most recent authoritative views, and a habit of thinking and speaking clearly on these topics, will be encouraged among the very large number of members the Society already possesses.

Believing, as I most confidently do, that the most rational, successful practice in medicine or surgery is simply impossible without a fair knowledge of morbid anatomy, I set the highest value upon such a Society as this, as an educational power, as a means at once of registering the progress in the science of pathology, of preserving countless facts of importance to serve as the basis of future compilation, and of stimulating us all to a deeper interest in the study of morbid anatomy, and to more earnest efforts to advance its position. I feel then that perhaps the most important function of the presiding officer of such a Society as this is to originate, to support, to encourage, to direct discussions on whatever topics of pathological interest may be suggested by the specimens presented at any meeting. I am aware that the decided advance in the frequency and general interest of these discussions at our meetings during the past few years has been in but small share due to my efforts; but I would most earnestly commend this subject to the attention of my successor, and to all those who are truly interested in the welfare of the Society, and the diffusion of accurate pathological knowledge among the profession in our community.

Before leaving this portion of my address, it would be improper to omit some allusion to the present position and future prospects of the Society; and I shall accordingly submit to you a few details as to its past work and its present capacity. The Pathological Society of Philadelphia was for-

mally organized on Wednesday, October 14th, 1857. Comprising rather more than a score of the most prominent members of the profession at that time, the first three years of its existence were marked by an unusual degree of activity. By the close of 1860 the roll of membership contained forty names, and the work accomplished had increased in corresponding proportion. A long period of inaction followed, during which many of the most valued members of the Society devoted themselves to their country's service, in the army or navy, while the energies of others were completely absorbed by the grave duties imposed upon them here at home. No sooner, however, had that troublous time passed over than we find this Society resuming its pristine vigor, and rapidly progressing both in numbers and activity. At the present time it numbers not less than one hundred and sixty-two active members, of whom fifty-three, or nearly one-third, have been added during the past three years. The income of the Society has increased with equal rapidity. For the year ending 23d November, 1873, it amounted to seven hundred and fifty-two dollars and twenty-seven cents; while for the current year the income may be stated as one thousand one hundred and eighty-five dollars and forty cents. It is evident that if the present rate of growth be maintained for a few years more the Society will be in a position not only to continue the publication of an annual volume of Transactions in creditable style, but devote a considerable sum each year to the encouragement of original pathological research. It may not be amiss in this connection to allude to a line of work which, at some future day, may be pursued with excellent results. Probably all of my hearers are familiar with the reports of the remarkable discussions that have taken place during the past year or two at the meetings of the Pathological and Clinical Societies of London. I speak of these discussions as remarkable; and such they surely were if we consider the unusual number of eminent men who participated in them, and the great value of many of the expressions of personal opinion or experiences which were evoked. It is certain that much of this information would never have been published if it had not been for the peculiar interest excited by these discussions. Now, I can conceive of few things more useful, as a means not only of eliciting the special knowledge of a few, but of arousing a wide-spread interest and zeal in the study of certain important subjects, than to have a meeting of such a Society as our own set apart from time to time for their discussion. It may be that this suggestion is as yet premature, and that a few years more preparatory work are necessary before we could with advantage attempt such formal debates on any of the great pathological questions at present at issue; but

I feel that at least we should look forward to this as one of the methods to be pursued in advancing the study of pathology among the profession in this city.

I am happy to be able to refer with satisfaction to the continued publication of the Society's Transactions. In some informal remarks addressed to you last year the hope was expressed that thenceforward the Publication Committee would be able to provide for a volume of our Transactions annually. There seems to be little doubt at present that this will be accomplished; and not only so, but that the amount and excellence of the material furnished for the volumes will progressively increase. A brief review of the dates of publication of the volumes of our Transactions up to the present time will assure us of the well-founded character of this hopeful expression.

Issued.	Embraced proceedings of	Number of specimens described.	Reports of Special Committees, and of Committee on Morbid Growths.	Number of pages of text.
Vol. I. 1860	1857-58-59	202	14	301
Vol. II. 1867	1860-66	168	3	229
Vol. III. 1871	1866-70	144	12	204
Vol. IV. 1874	1871-73	146	39	232
Vol. V. 1876	1874-75	149	27	252

While confirming the truth of what has been said above, this table also brings forward to notice the large amount of special work done by our committees. Not only has the appointment of the Committee on Morbid Growths been productive of great benefit to our proceedings, but we have continued to receive, as before, from committees appointed for the examination of special subjects some most elaborate and valuable reports. I must, however, allude more particularly to the numerous reports which have been furnished to the Society by its standing committee,—that on Morbid Growths,—and the more important and rare specimens presented at our meetings. Under the able chairmanship of our colleague, Dr. R. M. Bertolet, these reports have reached a point of accuracy and excellence which entitle them to be regarded as among the most valuable and authoritative decisions on pathological questions ever published in this country. And although he leaves us for the present, followed by the unanimous and cordial good wishes of his many friends, I feel assured that the investigations of this important committee will be continued no less actively and efficiently.

It was my intention to have closed these remarks by a careful examination of the actual amount of work accomplished by this Society

since its foundation in some one of the great departments of pathological research; and for this purpose I had gone over the Transactions up to the present time, and had selected the reports of specimens of the nervous system as illustrating most fully the way in which our proceedings have kept pace with, and have furnished examples of, all the most important recent advances in morbid anatomy. But upon reflection it has appeared that such a *résumé*, however interesting in itself and creditable to the activity of our Society, would be out of place on such an occasion as this; and I therefore omit it, not without the hope that at some future time I may be enabled to submit it to you.

I cannot close these brief remarks, with which terminate my official connection with this Society, without again expressing my appreciation of the uniform courtesy and kindness which have been extended to me during the time I have had the honor of acting as your presiding officer, and which have rendered the discharge of my duties at once easy and highly agreeable.

REPORT.

I.—THE OSSEOUS SYSTEM.

1. *Syphilitic caries of the skull.*

By DR. EDW. L. PARKS.

The patient, a negro, about 38 years old, entered the venereal wards of the Philadelphia Hospital, in charge of Dr. Maury, in 1868. Eight years previously he had a chancre on the glans penis near the frænum (the scar of which was still visible), for which he was not treated. There had been involvement of the inguinal lymphatics. Five or six years after the appearance of the chancre he sought medical aid for what he considered neuralgia or rheumatism of the head and some of the articulations and more superficial bones. His naturally dull intellect was clouded by an unusual hebetude when admitted to the wards, so that a full and reliable history was not to be had from him.

He complained of severe pain throughout the whole skull,—dull, gnawing, boring, and always worse at night. There were no evidences of cutaneous or other constitutional lesions to be seen. He was at once put upon appropriate treatment, with moderate doses of iodide of potassium. At the end of a week, as he was not relieved, it was decided to increase daily the dose of the iodide of potassium. At the end of three weeks he took daily ninety grains, with marked benefit. On the way to breakfast one morning he fell, with symptoms like those of apoplexy, and died within five minutes.

A *post-mortem* examination revealed the most wonderful erosive and carious inflammation of the skull, which was very much thinned, and lighter than usual. The base seemed somewhat softened, with little other appreciable change. All the other viscera were entirely free from any gummous deposit or structural change,—a thorough examination having been made.

The points of interest in this case are :

First, that the primary lesion was not treated ; especially noteworthy in connection with the severity of his final symptoms, and his death from the disease.

Second, the selection of the bones of the head as the seat of the constitutional disease, to the exclusion of all other tissues and regions.

However, this is not a unique condition. *September 23d, 1875.*

2. *Case of amputated foot, including the lower third of the leg, preserved free from putrefaction by the use of salicylic acid.*

By DR. C. B. NANCREDE.

Oliver M., æt. 8½ years, when returning from school on the afternoon of September 27th, 1875, had his right foot badly crushed by the wheels of a coal-car, stripping the skin to the lower third of the leg. I amputated the leg on the evening of the same day. The amputated portion was allowed to remain lying in the sun until twelve o'clock the next day, unprotected, except by a newspaper and some rags wrapped about it. I then rubbed in about a drachm of salicylic acid, dry, and enveloped it in a cloth wrung out of a weak solution of the same. Since that time it has remained exposed to all weathers, hanging out of a window having a southern exposure, without having presented any putrefactive changes.

From this it would seem that in this agent we possess a safe, cheap, inodorous, and effective preservative.

Dr. Nancrede, in reply to a question of Dr. O'Hara's as to *how* the acid could preserve the deeper tissues, as it was so insoluble, said that he presumed it was dissolved by the neutral sodium phosphate, which is present in every fluid and solid of the body, he believed, except the teeth. The great trouble in using the acid is its difficult solubility, only one part being dissolved by 240 parts of water. By the addition, however, of two parts of sodium phosphate, or one of the sulphites, it is readily dissolved.

Dr. James Tyson said he could understand how the substance dissolved in the serum by aid of its sodium phosphate could reach the deeper-seated tissues in accordance with the ordinary laws of osmosis and diffusion, and that the entire limb should thus be preserved.

Dr. Bertolet said he had had some experience in the deodorizing and preservative properties of this substance. He had, during the hot months of last summer, placed numerous specimens—among others, portions of a

lung much disorganized by phthisis, and exhibiting a strong disposition to decomposition—in an alcoholic solution of salicylic acid, and the effect seemed to be not only to remove the offensive odor, but also to preserve them in a good condition. Specimens kept in salicylic-acid solution (x-xx grs. to f3) did not assume, upon subsequent immersion in alcohol, the dingy color so noticeable in those treated by chloral hydrate.

Dr. Nancrede then said that salicylic acid possessed more than three times the anti-fermentative power of carbolic acid, as shown by preventing action in yeast, and that it was inodorous, non-poisonous, and non-corrosive, and that he hoped by its use specimens could be preserved macroscopically for a length of time, so that they could be examined microscopically unchanged.

October 14th, 1875.

3. *Epulis with associated alveolus.*

By DR. H. ALLEN.

The growth was removed from the right side of the lower jaw of a female 56 years of age. It was of the size of a plum, but formed two partially distinct masses, one of which lay within the alveolo-lingual groove, the other behind the lower lip at a point answering to the right lateral incisor tooth. Farther to the right side, the jaw was edentulous. The tumor had proved recurrent, the disease having reappeared after two ablations. In none of these had any excision of the alveolus been practised.

October 28th, 1875.

The specimen was referred to the *Committee on Morbid Growths*, which reported, November 11th, 1875.

Report of the Committee on Morbid Growths:

"The epulis removed by Dr. Allen belongs to the sarcomatous group of tumors. The growth is of only moderately firm consistence, lobulated, and devoid of any bony or calculus plates.

"Microscopically, your committee find that the greater portion of the tumor is formed by small round cells, with very large nuclei and little or no protoplasm. The intercellular substance is freely developed, generally finely granular, but at a few points fibrillated. Spindle-cells also exist to a limited extent, while only at great intervals are detected multinuclear giant or myeloplasmic cells. Thin-walled blood-vessels are abundantly present."

4. *Congenital absence of the radius.*

By DR. H. LENOX HODGE.

The dissection of the arm has been very carefully made by my friend Mr. T. Mortimer Loyd, student of medicine, who has also furnished the following memoranda of the examination :

"A white male subject, without any previous history, was brought to the Anatomical Rooms of the University of Pennsylvania. The body was well developed in all respects, except the left fore-arm and hand. The apparent age was 70 years.

"The left arm was of normal size to the elbow, but the fore-arm was much shorter than normal, being about eight inches in length. The hand and wrist were placed nearly at right angles with the fore-arm, being drawn towards the radial side, the palm looking towards the body. The whole hand was much smaller than its fellow of the opposite side; the thumb especially was very small, its metacarpal bone lying almost in front of the metacarpal bone of the index-finger, so that it was directed towards the palm. No cicatrices were found in the skin.

"Upon dissection, no cephalic vein was found, but two large veins were found on the inner side of arm, one in the normal position of the basilic, the other accompanying the brachial artery. The brachial artery, and the median, ulnar, and internal cutaneous nerves, were in their normal positions, above the elbow; below the elbow, the brachial gave off the radial artery, a small branch going down and supplying the muscles on the outer side of fore-arm, passing over and in front of the metacarpal bone of the thumb to palm of hand. The ulnar artery, the main continuation of the brachial, supplied all the muscles on the inner side of fore-arm, and formed chiefly the superficial and deep palmar arches of the hand. The radial nerve was not traced below the elbow. A large branch of the median supplied the muscles on the outer side of fore-arm. The median nerve supplied the flexors, both sides of the thumb, first and second fingers, and radial side of ring-finger. The ulnar nerve supplied the flexor carpi ulnaris, and both sides of the little and one-half of ring-finger.

"The biceps muscle of this, as well as that of the right arm, was supplied with a third head, arising from the upper portion of the shaft of the humerus, and on this side the tendon of the biceps was inserted into the coronoid process of the ulna. A flat, triangular muscle, arising from the internal condyloid ridge, converged to a tendon and joined that of the biceps. A muscle supposed to be the supinator longus had a normal origin

for that muscle, but extended across the elbow-joint anteriorly, and was inserted into the intermuscular septum on the inner side of arm. The brachialis anticus, origin normal; insertion, inferior extremity of humerus anterior to joint and coronoid process of ulna, beneath the insertion of the tendon of the biceps. The flexors sublimis digitorum and profundus digitorum had a common origin from upper two-thirds of ulna, inner side, and the intermuscular septum between these and the flexor carpi ulnaris, and had normal insertions. The flexor carpi ulnaris was well developed, had its origin from inferior extremity of humerus, and from the whole length of ulna on its inner and posterior surface (this was the only muscle attached to posterior surface of ulna except the triceps, which was inserted into the olecranon, as usual), normal insertion.

"Extensor communis digitorum, origin from anterior surface of ulna, also receiving a strong tendinous slip from the tendon of the biceps. The tendons of insertion normal. Extensor carpi ulnaris well developed; origin, upper two-thirds of ulna, and the intermuscular septum of the triceps; its tendon passed over a groove on inferior extremity of ulna, and was inserted into the metacarpal bone of the little finger. The pronators and the extensors and flexors of the thumb and of the radial portion of carpus were absent. The only muscle to the thumb was a small slip, having its origin from the metacarpal bone of the middle finger.

"Action of muscles. The hand was drawn towards the ulna by the extensor carpi ulnaris. The dorsum thrown outwards—away from the body—by extensor communis digitorum. The palm drawn inwards—towards the body—by the flexors sublimis and profundus digitorum.

"The radial bone was entirely absent. The ulna had well-marked olecranon and coronoid processes and sigmoid cavity, but was articulated a little nearer the external condyle than normal. The length of the ulna was seven and a half inches, from olecranon process to inferior extremity; its shaft was curved, the concavity being anteriorly. The carpus was articulated on radial side of ulna—not at its extremity—and almost at right angles with it."

Dr. John Ashhurst, Jr., remarked that he observed a small piece of bone in the usual position of the head of the radius, and asked Dr. Hodge whether this was a rudimentary radius, or an abnormal process of the ulna.

Dr. Hodge replied that, being a dry preparation, it did not admit of that accurate study which could be made if the bone were thoroughly cleaned; it might be a part of the ulna, or a rudimentary radius.

Dr. Ashhurst was disposed to consider it a rudimentary radius. The

members of the Society interested in these deformities might examine a cast of a similar deformity presented by him to the Museum of the College of Physicians, in which, however, the lesion was the result of an injury. The cast was taken from the arm of an adult, who had in childhood sustained a compound fracture, involving the lower epiphysis of the radius, as a consequence of which the radius had ceased to grow, while the ulna continued to do so, but became incurvated, like that in the specimen exhibited by Dr. Hodge. The strength of the arm seemed to be in no way impaired, the man being able to lift heavy weights and to use his limb in his daily work.

Dr. Wm. Pepper asked whether it was not usual in such cases for the corresponding fingers to be even much more rudimentary than in this case. In one he had examined with some care in the living subject, there was congenital absence of the humerus, radius, and ulna. The carpus was very imperfectly developed. On the ulnar side was but a little bud corresponding to the three ulnar fingers, with corresponding metacarpal bones. The index-finger and thumb with their metacarpal bones were quite well developed. There was a considerable degree of flexion and extension, even from the axilla.

November 12th, 1875.

5. *Gelatinous arthritis with caries of knee-joint.*

By DR. JOHN ASHHURST, JR.

The specimens are from a case in which excision of the knee-joint was performed a few hours before. The patient was a man aged 28, and the disease had been of three years' duration, though it was only during the last few months that he had been confined to bed. The joint was misshapen and very much swollen, painful (especially at night), and tender when touched. There was but slight impairment of its mobility. The disease had advanced to the stage of suppuration, as proved by an exploratory tapping about two weeks before. The synovial tissues, ligaments, and semilunar cartilages were found to have almost disappeared, what remained being in a state of gelatiniform change. The chief seat of disease was in the femur, the condyles of which were almost deprived of cartilage, and markedly carious; the patella was slightly affected, but the tibia appeared healthy. A large abscess occupied the position of the bursa beneath the tendon of the quadriceps femoris muscle.

In reply to a question, Dr. Ashhurst described the clinical and diag-

nostic features of gelatinous arthritis, and referred to Barwell's investigations as to the nature of the gelatiniform change.

December 23d, 1875.

6. *Femur, with osteophytes, from a case of psoas abscess.*

By DR. HARRISON ALLEN.

The femur was taken from the body of a negro, who had long been the subject of psoas abscess. The abscess had pointed below Poupart's ligament, prior to his admission into the Philadelphia Hospital in March, 1875. Disease of the femur was diagnosed, since a probe could be carried towards this bone, and an outgrowth from the inner side of the shaft, near the neck, could be imperfectly defined through the relaxed and emaciated limb. The femur is remarkable for the amount of secondary osteophytes thrown out near the point of exit of the old abscess.

January 13th, 1876.

7. *Mastoid sequestrum.*

By DR. CHARLES H. BURNETT.

This sequestrum, consisting of a large piece of the outer table of the mastoid portion of the temporal bone, was removed from Frank H., 16 months old, born in Philadelphia.

He was attacked by diphtheria in March, 1875, and was treated for that disease by Dr. Harlow, who finally sent him to me for treatment of his aural disease, six weeks after the onset of the diphtheria.

The mother of the child states that on the fourth day after the initial symptoms of diphtheria she noticed a red swelling behind the right auricle, over the mastoid. This swelling increased rapidly in size, but is said to have caused the child *no* pain, nor was it markedly tender on pressure. There is no history of any previous aural disease, nor of any diphtheritic deposit in or about the external ear.

By Dr. Harlow's advice, the mastoid abscess was poulticed, and in a few days it was opened by him, with a free discharge of pus. From that time until I saw the patient it seems that a constant and offensive discharge continued from the mastoid incision and from the ear.

I examined the case for the first time on the 22d of April, 1875, about

six weeks after the onset of the diphtheritic disease, and found by the probe dead but adherent bone on the mastoid portion near the external auditory canal. The auditory passage was blocked by granulations. There was also considerable swelling about the ear, and the pus tended to burrow in the direction of the sterno-cleido-mastoid muscle. There was a sinus running from the mastoid abscess into the external auditory canal, which will, I think, account for the discharge from the ear and the granulations alluded to above, as well as lend probability to the statement of the mother that the mastoid disease preceded any kind of discharge from the external auditory canal. On the 27th of April, 1875, I made an incision, an inch long, over the mastoid portion, which gave free exit to the pus, and diminished the discharge from the ear, as well as the tendency on the part of the pus to burrow downward into the neck. Through this incision I could feel with my little finger the denuded bone.

In a month, on the 28th of May, there was a detached piece of bone at the opening I had made over the mastoid, and on June 1st I extracted the sequestrum here presented. The general swelling around the ear had gone down. The treatment up to this time had been simple cleansing of the ear and keeping the mastoid incision free enough for drainage and to permit the escape of dead bone.

The child was considerably run down by his blood-disease, but, with tonics and the good effects of a summer in the country, rapidly grew better. The ear was kept carefully cleansed, as was the opening of the sinus behind the auricle, and a weak solution of sulphate of copper (3 gr.—f3j) was used for instillation and injection.

By the 16th of February, this year, two hundred and ninety-five days after the free incision over the mastoid, the sinus behind the auricle finally closed; a slight discharge, a few drops, still came from the external ear every day or two.

So far as can be ascertained in so young a patient, now about 26 months old, there is no impairment of hearing left as the result of the mastoid disease.

In this child some of the chain of glands situated over the mastoid portion of the temporal bone and along the tract of the sterno-cleido-mastoid muscle have successively enlarged and sluggishly suppurated, without pain, which would seem to indicate that the inflammation over the mastoid portion, and of its outer table, in this case, was due to an inflammation of such a gland, the first in the chain to be diseased by the diphtheritic poison. Such a disease as this, occurring *over the outer wall* of the mastoid portion *in a child*, becomes of moment not only to the

hearing but even to the life of the patient. The latter is due to the fact that *in children* there is much greater probability of an extension inward of such a disease as I have just described than there is of its successful outward termination, for the dense tissues over the mastoid in young children are much more resistant than is the thin and somewhat fissured outer table of the mastoid portion of the temporal bone. Hence in just such a sluggish form of abscess over the mastoid as was found in this child there may be danger of a burrowing inward of the disease, deep inflammation of the mastoid cells, caries extending into the cranial cavity, pyæmia, and death.

It may be asked, Did this disease arise inside or outside of the mastoid portion of the temporal bone? It would seem from the latter, because the first aural symptom, if it may be called such, was the mastoid swelling, unaccompanied by pain in the ear. Had the disease started in the middle ear or in the mastoid cells, there would surely have been symptoms of great suffering in the child at the outset, and subsequently, it is highly probable, we should have found an impairment of hearing; whereas that function has not appeared to be affected at any time during the disease.

February 24th, 1876.

8. *Caries of temporal bone.*

By DR. W. H. WINSLOW.

E. S., a girl æt. 7 years, came to the Eye and Ear Department of the Children's Hospital May 1st, 1875. She was of a markedly strumous constitution, of the yellow-haired, blue-eyed type, and was pale, anæmic, and emaciated. At the age of two years she had had an attack of acute purulent otitis of the right ear as a sequela of tonsillitis, which became chronic under inefficient treatment. She had not had any of the exanthematous diseases. Since the initiatory attack there had been a constant discharge of offensive pus from the ear.

One year before presentation at the clinic, a swelling had occurred over the right mastoid, which finally gave way spontaneously, and discharged considerable pus. The opening had not closed, but a moderate flow had coexisted since with that from the meatus. The continuous discharge had evidently undermined the child's health. She had suffered from paroxysmal headache and irritation of the facial nerve, as evinced by unilateral spasms of the facial muscles. No bone had ever been discharged.

Examination revealed a large fibrous polypus, filling the middle meatus,

and the sinus upon the mastoid led down to carious mastoid cells. Ether was administered, the polypus was torn away, the sinus enlarged, and the whole posterior bony wall of the mastoid portion of the temporal bone, which was found exfoliated and loose, was removed by Dr. Geo. C. Harlan. Chloride of zinc, gr. i to fʒi of water, was applied several times daily to all the pyogenic tract, and tonics given.

June 29th.—A respectable tympanic membrane had been reproduced, with a small polypus upon the wall of the external meatus, which was destroyed by chloro-acetic acid. Discharge from the meatus and post-auditory sinus was very slight.

August 1st.—The meatus was healthy, the sinus had closed, and the child was discharged, cured.

The larger piece of bone, which is mended by a small strip of paper, belongs to this history.

March 9th, 1876.

9. Caries of the temporal bone.

By DR. W. H. WINSLOW.

M. W., a girl æt. 2½ years, anæmic, and of strumous diathesis, with light hair, blue eyes, and stumpy, decayed teeth, appeared at the clinic of the Children's Hospital last July with fetid pus literally streaming from her right ear. Sixteen months before she had had severe scarlatina, with a sequela of acute purulent otitis of the ear, which had become chronic. She had been treated with the ghostly atoms of the Hahnemannian school with the usual result, and the child's health had become materially impaired.

The membrana tympani was destroyed, the mucous membrane of the tympanum was thickened and eroded; but there were no polypi. A sulpho-carbolate of zinc wash was ordered and tonics prescribed.

Two days later, when I tried to inject warm water into the ear, I found the meatus firmly closed, and with forceps removed a piece of bone, evidently belonging to the mastoid cells. No denuded bone could be felt deeper. Sulpho-carbolate of zinc wash, inflation, and solution of nitrate of silver, with tonics, constituted the treatment.

December 31st.—There had been no further sign of caries, the discharge had much diminished, and the tympanum was approaching a healthy condition.

In February the child was discharged, cured. *March 9th, 1876.*

10. *Excision of the hip.*

By DR. JOHN ASHHURST, JR.

The head and neck of the left femur, removed by excision from a man 20 years of age, who had suffered from hip-disease for nearly five years. The patient was admitted to the Episcopal Hospital in January, 1876, having previously been an inmate of another hospital, where an unsuccessful attempt had been made to restore the mobility of the joint by the process of *brisement forcé*; the sole result of the attempt having been to lead to the formation of a large abscess, which was pointing on the outer side of the thigh when the case first came under my observation. This abscess was opened a few days after the patient's admission to the Episcopal Hospital, and excision was resorted to on March 15th, since which date the patient's condition had slowly improved. The femur was divided between the trochanters with a chain-saw, and the extremity of the shaft rounded off with cutting pliers; the acetabulum was healthy except at one point, where it was scraped with the osteotrite. The head of the femur was markedly and the great trochanter slightly carious.

April 13th, 1876.11. *Excision of the knee.*

By DR. JOHN ASHHURST, JR.

The exsected knee-joint of a woman 26 years of age, sent to the Episcopal Hospital by Dr. W. H. Bunn. The case was one of partial ankylosis, with recurrent arthritis and consecutive dislocation, the duration of the disease having been, in all, nineteen years, and the patient having been bedridden for the last six months. Excision by the simple transverse incision was performed on March 24th, and the progress of the case since the operation has been perfectly satisfactory. This case was one of the ordinary form of arthritis, the joint being almost obliterated by intra-articular adhesions. The semilunar cartilages had disappeared, and the articular cartilages were eroded, the femoral condyles being carious, and one carious patch existing also in the tibia. The synovial membrane at one point presented the appearance of gelatiniform change, thus illustrating the fact heretofore pointed out by myself, that the gelatinous and ordinary forms of arthritis may coexist in the same case. April 13th, 1876.

II.—THE DIGESTIVE APPARATUS.

1. *Soft cancer of the pancreas.*

By DR. MICHAEL O'HARA.

Mrs. H., during her life, was a remarkably strong woman until eight years ago, when she suffered for two years from rheumatism. She has had seven children, six of whom are living. For the past three years her health has been failing, as shown by headache, dizziness, sour stomach, tympanitis, and habitual costiveness. But there seemed nothing serious until February, 1875, when she slipped on the ice and hurt her back. She thenceforward complained of pain in her back and left side. To these were added, in March last, loss of appetite and great difficulty in passing her water. She had felt a lump in the abdomen since the middle of March, and it soon began to be very painful. She could neither sleep nor eat. I was called to her in May, and found a tumor in the lower abdominal region and extending upwards. The diagnosis was cancer of the mesenteric glands. The tumor was large and pear-shaped. In the latter part of May she vomited everything, but morphia and bismuth relieved her somewhat. Injections relieved the costiveness; there was no movement of the bowels without them. The difficult urination continued. She continued wasting, the tumor enlarging until it was three inches above the umbilicus at the time of her death, which was caused by exhaustion and shock from diarrhoea and peritonitis.

She died August 17th, 44 years of age.

The *post-mortem* examination, conducted by Dr. Willard, revealed the form of cancer of pancreas which we present to you. The tumor was unusually large, brain-like, cystic in its central portion, and adherent to all the adjacent viscera.

Dr. Wm. Pepper remarked that the case was one of more than usual difficulty of diagnosis, although cancer of the pancreas is well known to be one of the most difficult to determine. The difficulties were perhaps here increased by the locality of the tumor, its size, and adhesion to the spinal column. Jaundice, which is often present, was here wanting. Pain in the

back, which is very constant, was here present, but this is noted in so many other conditions as to have no diagnostic value.

Dr. Harrison Allen related the history of a parallel case, that of M., æt. 62, single, with hereditary tendency to cancer; was out of health (anæmia with constipation) for a year previous to the appearance of a tumor below the line of the false ribs to the left of the median line. It grew rapidly downward to the left, and was at first supposed to be a splenic tumor. The mass when first seen was sub-globose, movable, but not adherent to the parietes of the abdomen. Pain was persistent from the beginning. After a duration of four months, during which time emaciation became marked, she died. There was no vomiting prior to the second day before death; upon this and the following day she vomited several times.

Post-mortem examination, twenty-four hours after death.—Decomposition had set in. The transverse colon was pushed down, crossing abdomen below umbilicus. The space between it and thorax was occupied by a pultaceous mass of soft cancer. The left lobe of the liver was large, touching the ribs on the side of the left hypochondriac region. The growth was adherent to its under surface, but did not invade the parenchyma. The vertical portion of the duodenum was compressed and contracted in calibre. The first third of this viscus was much inflated. The spleen was very small,—the size of an egg,—of a bluish color externally, and of pultaceous consistence. Parts below transverse colon in no way involved. The stomach connected with the colon in a normal manner.

The growth, therefore, was in the epigastric region originally, pressed the stomach downward from the right side towards the cardiac end; thus causing the stomach to assume a more vertical position, with the effect of throwing the cardiac end well up into the left hypochondrium. It was firmly adherent everywhere to the abdominal walls.

Dr. James Tyson asked whether cancer of the pancreas often reached the size of the specimen exhibited this evening.

Dr. Pepper said not commonly, although he had met with cases in which the tumor was quite as large as this. Often the adjacent glands are involved at the same time, and thus add to the size of the mass.

September 9th, 1875.

2. *Fibro-adenoma papillare in the mucous membrane of the colon around the ileo-cæcal valve.*

By DR. JOHN M. KEATING.

I am indebted for the specimen which I have the honor of presenting to you this evening, to Dr. Robert Cruice, under whose care the patient was from the 10th of August until her death.

E. J., æt. 32, school-mistress, native of Philadelphia, bright, intellectual, energetic by nature, engaged in duties which required her constant attention and involved no little amount of worriment and anxiety, always enjoyed good health. The family history, which I regret I am obliged to leave imperfect, states that she lost three brothers who had reached adult life, one from phthisis and two from some intestinal disease, which, as I learned from a non-professional member of the family who was present at all the *post-mortem* examinations, resembled her own complaint as to location of disease and symptoms. Her mother died of "consumption of the bowels;" though I believe there was no examination after death to verify this statement.

Eighteen months ago E. J. first complained of pain on motion, in the right iliac fossa, which pain became so severe that her attention was drawn more particularly to its seat, and she recognized the presence of a small tumor. This soon increased in size, completely incapacitated her for work, and medical advice was for the first time sought. When seen by Dr. Cruice, on August 10th, she was emaciated, anæmic to an extreme degree, and could with great difficulty be moved from her recumbent position on account of a severe paroxysmal pain, radiating from the right iliac fossa down the nerve-trunks of the leg, and brought on by the slightest motion.

The tumor at this time was half again as large as a closed hand, non-fluctuating, tympanitic on percussion, and excessively painful upon the slightest manipulation. The right leg was markedly œdematous, and the left also, but to a less degree. No rectal or vaginal examination was made. She had at this time profuse diarrhœa: passages small, thin, watery, and offensive, yellow in color, and containing no blood. It may be stated that the patient was decidedly cachectic, and on this account a probability of carcinoma was suggested by a previous medical attendant. After some weeks the tumor appeared to soften at its most prominent point, and at once the attending physician suggested the propriety of cutting down and relieving the contents. This suggestion had been urged before by Dr. Hodge, who had attended the case, and who had introduced an exploring-

needle without any result to throw light on the case. But no operation was allowed to be performed, and the case proceeded with no other treatment than liquid nourishment and opium for the relief of pain.

Two days before death (which occurred on Friday) the swelling in the leg suddenly disappeared, and the projecting portion of the tumor gave place to a universal swelling of the lower portion of the abdomen. The patient gradually sank after this.

Autopsy, third day after death, in presence of Drs. Hodge, Harrison Allen, Robert Cruice, and John M. Keating. The body was emaciated extremely, and signs of decomposition were fully established. An incision was made over the region of the tumor down to the inter-muscular fascia of the abdomen, and a quantity of pus, which had separated the muscular layers, made its appearance. The omentum and abdominal peritoneum were adherent to the tumor and the abdominal walls immediately around it. A few coils of the small intestine were firmly bound above and to the sides of the mass, but in other portions no evidences of peritonitis were detected. The tumor was nodulated, and comprised the whole caput coli, leaving alone the vermiform appendix, which was not diseased. The cæcum with its enclosed mass was firmly attached to the abdominal walls, and only after the intestine was opened could the opening which gave exit to the pus be discovered. A quantity of pus was still remaining within the cæcum. The uterus and ovaries were examined, and found healthy.

Should this case prove to be one of encephaloid cancer, its interest will be greatly augmented. In reading up the subject, I find that cancer of this portion of the colon is not rare (so it is stated by Reynolds); but in the table of cases of stricture of the colon in which colotomy was performed, I find but one mention as having been found on *post-mortem* examination undiagnosed, a case of scirrhus of the bowel, with death two days after the operation (quoted by Harkins, from Monod's paper in the *Archives Générales*, 3d series, vol. ii.). The case was that of a female aged 25.

September 23d, 1875.

Dr. Harrison Allen said that he was present at the *post-mortem* examination. There had evidently been an abscess, which, if the suspected deposition of cancer was primary, was unusually interesting. The contents of the collection had travelled downwards, and finally made their appearance at the surface above Poupart's ligament. An eminent surgeon, who had seen the swelling at an early stage, pronounced it to be of ovarian origin. Dr. Hodge detected its purulent character later. As stated, the death was sudden, and, it was alleged, almost immediately succeeded the

disappearance of the parietal tumescence. Dissection showed that the pus had been diffused between the abdominal muscles.

Dr. William Pepper asked Dr. Allen whether he did not regard the presence of the abscess as strongly indicative of inflammatory rather than cancerous origin.

Dr. Allen was inclined to think so, but the elements of what was thought to be a new growth, and the presence of this projection into the gut, together with the history of the case, appeared to support the views of those who had studied the case as one of cancer. There was no stricture of the bowel, nor was there any enlargement of the lymphatic glands. It may have been typhlitis.

The specimen was referred to the *Committee on Morbid Growths*, which reported October 14th, 1875.

Report of Committee on Morbid Growths:

"In the specimen presented by Dr. Keating, a number of sharply-defined nodules, polypoid growths, are situated upon the mucous membrane of the colon around the ileo-cæcal valve. These new growths, being arranged in a circular manner upon the inner wall, and of considerable dimensions, project into lumen of the intestinal canal, and have evidently given rise to a more or less complete stenosis at this place. The growths have mostly a narrow, some quite a thin base. Some of them have a smooth surface, but the majority are covered with numerous branching papillæ, and present a dendritic appearance when immersed in a liquid.

"Microscopically these neoplasms show an excessive development of the papillæ, which are covered with the ordinary columnar epithelium. The fibrous stroma of these papillæ is invaded by ingrowing, hypertrophied, tubular glands. These tubuli comprise the principal bulk of the growths. They are also lined with short columnar cells which are united together laterally. A well-defined tunica propria can generally be distinguished readily. The muscular layer and surrounding connective tissue are not invaded by any epithelial elements; there exists in the latter simply a hypertrophy and cellular infiltration, such as is readily accounted for by irritative processes. In the absence of any invasion of the adjacent structures and of anything like an alveolar type, your committee would designate these tumors, not as carcinomatous, but as adenomata, and, adopting the nomenclature of Klebs, as fibro-adenoma papillare."

3. *Myo-sarcoma from the abdominal cavity.*

By DR. JOSEPH V. KELLY.

I. M., æt. 4 years, was peevish and fretful in the early part of July, 1875, and later in the same month complained of pain in the epigastric region, which pain persisted until death, in the early part of November. Vomited in July, and had diarrhoea. Vomiting of food continued until death; diarrhoea was not constant. I saw him in the beginning of August, when, besides the above symptoms, I learned that he had daily febrile attacks, preceded by chilly feelings and followed by sweating. I looked upon the case as one of malarial poisoning, and gave him quinia, which seemed to do him but little good. Two weeks later I examined the abdomen, and detected an abdominal tumor. This tumor occupied the position of an enlarged liver, excepting that the bulk of the enlargement was situated on the left of the median line, where a hard knot was easily felt. The dulness of the tumor passed into the ordinary splenic dulness, which, I thought, to a certain degree corroborated the diagnosis of chronic malarial poisoning. To the quinia I now added iron and arsenic. At this time there was some ascites, but the urine was normal. As no improvement followed, as the child steadily wasted, and as the signs of obstructed circulation became more marked, two weeks later I gave an opinion that the case was not one of malarial poisoning, as I had hoped at first it might be, but that the abdominal enlargement was due to a malignant growth.

After this the case passed from my care, and I did not see the little patient subsequently during life. The families of the patient, on both sides, were free from tubercular disease; but the grandfather of the child died of external cancer, which circumstance, I presume, is of importance in the clinical history of the case.

November 11th, 1875.

The specimen was referred to the *Committee on Morbid Growths*, which reported, December 24th, 1875.

Report of the Committee on Morbid Growths:

"Dr. Kelly's abdominal tumor must be placed among that rare class, the teratoma. Its microscopical appearances are equally as varied as the marked differences in color and consistency noticeable in different nodules of the growth. In many sections *striated muscular fibres* are seen. These are often arranged in bundles of ten to thirty, and these bundles interlace, very much like smooth muscular fibres of the uterus. These muscular

fibres are also, at places, solitary; they are of nearly uniform width, which does not greatly vary from that of the physiological fibre, but they are nearly all exceedingly long, stretching over a number of fields. Only rarely is a short primitive fibre to be seen, when both ends are usually pointed, thus resembling a striated spindle-cell.

"Besides the striped muscular fibres, some nodules present a scanty fibrous connective tissue, coursing between the fibres. Others, comprising the greater bulk of the growth, show a typical round-celled sarcomatous growth, with large nucleated cells, a little larger than the white blood-corpuscle. The intercellular substance very sparse, mostly homogeneous. In not a few nodules, these two varieties are found intimately mixed, the sarcomatous cells being arranged either in large groups or in single rows, between the muscular fibres. Your committee would designate this tumor as a *myo-sarcoma striocellulare*."

4. *Perforating ulcer of the stomach.*

By DR. A. F. MÜLLER.

Mrs. J., æt. 28, housekeeper, had enjoyed perfect health till October, 1872, when she began to feel dull pain immediately under the ensiform cartilage, increased by pressure, with nausea and occasional vomiting. On October 10th, 1872, she had an attack of hæmatemesis, voiding nearly a pint of dark, partly-digested blood, mixed with particles of food. During the following day, after a meal, vomited half a pint of bright arterial blood, also containing undigested food. She was ordered one-half grain doses of nitrate of silver with opium, and had her food given her by enema entirely for nearly three weeks, when small quantities of appropriate food were allowed by the mouth. The patient convalesced slowly, and in six weeks was able to be about the room and to do light household work, but never regained her full strength.

During the interval between the first attack and the date of death, she had frequent attacks of hæmatemesis, which occurred almost invariably at the menstrual period, the menstrual flow being either entirely absent or very scant, though she had all the premonitory symptoms of menstruation. The pain at the ensiform cartilage was present during nearly the whole of this time in greater or less degree. She could not take a sufficient quantity of food to keep up her general nutrition, and became extremely emaciated, so that during the last three months of

her life she was almost a skeleton, and had not strength enough to leave her bed.

On November 8th, 1875, she was suddenly seized with violent abdominal pain and intense nausea and retching. When seen she had all the symptoms following perforation, with, cold, clammy extremities, and died within twenty-four hours.

Autopsy thirty-four hours after death; abdominal cavity only examined. When opened, the contents of the stomach were found in the peritoneal cavity, having escaped through a perforation in the anterior wall of the stomach. A number of points of recent exudation were found, and about six ounces of serous effusion. The stomach presented a series of ulcers, varying from the perforating ulcer to a simple erosion of the mucous membrane.

November 11th, 1875.

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5. *Thickened transverse mesocolon, with multiple herniæ of muscular and mucous coats protruding through the encasement; cirrhosis of liver.*

By DR. DE F. WILLARD.

A. B., æt. 57, was a prominent politician, and constant drinker for years. There was no abdominal trouble until about two years since, when symptoms of obstruction of portal system made their appearance. Cirrhosis of liver was soon diagnosed, and the case steadily progressed, ascites, œdema, dyspnœa, etc., appearing in their usual order. Was repeatedly tapped, with the result of affording only temporary relief. Diarrhœa, alternating with constipation, loss of appetite, pain, general weakness, and ascites, increased until November 26th, when, attempting to get out of bed, he suddenly fell back and instantly expired.

Autopsy.—Eight or ten gallons of pale-yellow fluid in abdominal cavity. Peritoneum, both parietal and visceral layers greatly thickened, especially on right side. Strongly adherent lymph at many points. Liver, stomach, and colon firmly united by layers of lymph. This inflammatory thickening of the mesocolon had caused it to become a dense fibrous sheath around the transverse colon, in which encasement were numerous openings, varying in size from one to six lines in diameter, through which protruded pouches of the mucous and muscular coats of the bowel. Some of these projections were as large as a chestnut, and their chief interest consisted in the fact that should they become filled with hardened fœces, strangulation and subsequent sloughing would be a result quite possible, and one which would present many difficult points in diagnosis. Liver markedly

cirrhoted; kidneys large, congested; heart exceedingly small; pericardial effusion normal; no valvular disease.

December 9th, 1875.

6. *Cancer of the peritoneum.*

By DR. JAMES H. HUTCHINSON.

M. G., æt. 56; married; housekeeper; German; admitted into Pennsylvania Hospital October 21st, 1875. Patient's father died of consumption, and her mother of some acute chest-trouble. When young, patient enjoyed good health, and menstruated regularly. She has had two children, the last one being born twenty-six years ago; after this she enjoyed moderate health, with the exception of an occasional feeling of uneasiness in the pelvic region, until the arrival of her menopause, when she was forty-three years old. Her last menstrual flow was very profuse, and continued for nine weeks; after this the discharge gradually became purulent, and remained so, subject, however, to slight exacerbations, until her admission. For the succeeding thirteen years the most prominent symptoms were purulent discharge from vagina, pain in the right inguinal region after any marked exertion, and a general feeling of malaise. In June, 1875, she first noticed enlargement of her abdomen, and in three months she was tapped, and a large amount of fluid was drawn off, which was somewhat tinged with blood; the fluid rapidly reaccumulated, and before her admission into the hospital she was tapped twice more, the last time the fluid being of a much darker color.

On admission, the patient is weak and emaciated, her appetite is poor, and her bowels constipated. There is marked globular enlargement of the abdomen, with but little bulging in the flanks. The umbilicus is but moderately prominent, and is much nearer the ensiform cartilage than the pubes. The surface of the abdomen is traversed by enlarged veins. There is marked fluctuation. Dulness exists in median line above pubes, and in the left flank much more than in the right. Change of position does not influence the lines of dulness to any marked degree. Indurated masses, quite tender upon pressure, can be felt in both inguinal regions, but particularly in the right, from which point they can be traced as far as the median line. Vaginal examination reveals indurated masses on both sides of the uterus, and apparently connected with it, as that organ is not freely movable, but seems bound down. The largest mass exists upon the right side, and seems continuous with the mass felt in right inguinal region. The os uteri is apparently normal, and there is no ulceration of the vagina.

The second sound of heart at right base is slightly booming, but no positive murmur can be heard. There is slight atheroma of the radials. Urine pale, slightly acid, faintly phosphatic; sp. gr. 1019; no albumen.

Iron, in tonic doses, ordered.

November 20th.—Asks for her discharge.

December 2d.—Readmitted. The abdomen has increased greatly in size, measuring forty-two inches in circumference; the right side bulges considerably more than the left, and there is dulness around umbilicus extending towards the right. Beneath the arch of the ribs upon the left side a hard nodular mass, which is very tender upon pressure, can be detected. The masses in the inguinal regions seem larger, but are obscured by the effusion. Considerable œdema of the lungs exists, with consequent dyspnoea.

December 3d.—Tapped, and Oxxiv of a thick, slightly gelatinous, bloody fluid were drawn off. After the tapping the hard masses can be very distinctly felt to have increased in size.

December 27th.—Reaccumulation; tapped again, and Oxxiiss of fluid were drawn off.

December 30th.—Impaired resonance, feeble heart-sounds, and subcrepitant râles exist over left base posteriorly. There is dry cough, and patient is very weak. Ordered brandy, f3ij, and stimulating expectorants.

January 3d.—Dulness now exists in right flank, and tympany in left; this is not influenced by change of position.

January 18th.—Fluid shifts more than formerly, but the percussion-note still continues dullest in the right flank.

Tapped again, and Oxxv of fluid drawn off. Soon after this, patient began to suffer from violent pain in the course of the sciatic nerves, necessitating large doses of morphia.

January 19th.—Violent pain in right side. Slight fever.

January 20th.—Died, but shortly before this event took place her right arm and both her legs became congested and œdematous, the left pupil became contracted and the right dilated, and both eyes were drawn strongly upward and towards the left.

Autopsy by Dr. Longstreth, fourteen and a half hours after death.—Slight rigor mortis.

Thorax.—The *pericardium* contained a small amount of clear serum; there was no evidence of inflammation. Both the parietal and visceral surfaces were normal.

The *heart* was covered with a slight amount of fat, and its tissue was flabby. The cavities contained firm clot (not fibrinous), which extended into the great vessels at the base. The valves, especially the mitral, seemed

thicker than normal; their surfaces were smooth, but showed atheromatous changes. The aortic leaflets were also slightly thickened and whitish, but less so than the mitral. Otherwise the heart was normal.

Pleura.—There were a few slight old adhesions, but no fluid. One or two small masses (similar to diseased conditions found elsewhere) were found in the tissue of the anterior mediastinum, and also on the pleural surface next to the right side of the pericardial sac. On the upper surface of the diaphragm were found small patches of a similar nature.

Lungs.—There was puckering at apex of left lung, but on section through this point there appeared nothing abnormal in the subjacent pulmonary tissue. On the posterior aspect of the upper lobe of the right lung there were seen minute white specks beneath the pleura, with no roughening of its surface; these were not found at any other part. On section of the lung-tissue it exuded abundant bloody frothy fluid; the tissue was crepitant throughout, and congested posteriorly. It appeared otherwise normal everywhere. The *glands at root of lung* were enlarged and rather conspicuous, softened, and dough-like, and, after section, pressure caused them to break down and to pour out their whitish-colored interior.

Abdomen.—*Liver* was small, and weighed three pounds three and a half ounces. Its outline was irregular and its tissue softened, but on section there was found no evidence of local diseased condition (no malignant deposit).

The *gall-bladder* was full of greenish-yellow bile.

The *stomach* was irregular in its outline and not distended; its walls appeared normal. Behind it was a large mass of glands about the size of the closed fist; these were slightly attached to both liver and stomach, and bound these organs together by long bands of loose fibrous tissue.

The *spleen* had its capsule thickened and puckered, and it was surrounded, especially at the lower part, by inflammatory adhesions. On section at the upper middle portion, it was firm and irregularly streaked red and white (embolism); the lower segment of the organ was normal.

The *pancreas* was very much reduced in size, and its tissue very firm; this organ and the vessels in the gastro-splenic omentum were surrounded and apparently pressed upon by the enlarged glands.

The *supra-renal capsules* were of normal appearance; the right one was pretty firmly adherent to the tissue around capsule of kidney.

Right kidney.—The capsule was tightly adherent, as well as the perinephritic connections. After removal of the capsule, the surface presented a granular appearance and a few minute cysts. On section, the relation

of cortex to medullary portion was about normal. The cortex appeared markedly streaked. At the upper portion of the organ there was irregular mottling, very red and white; the upper middle portion showed an area of a distinctly white color in comparison with the surrounding tissue. The pyramids connected with these areas were uniformly of a deep-red color, and the arteries passing to the upper portion of the organ were filled with firm clots, fibrinous, though not white (blood-stained), which were not adherent to the coats of vessels (recent embolism).

Left kidney.—The perinephritic connections were very firm, and the capsule was very tightly adherent and thickened; on removal it left a comparatively smooth surface, which was finely mottled, and showed stellate veins very distinctly. On section, the relation of the cortex to the medullary portion seemed normal. There was no positive evidence of embolism, although portions of the cortex showed the same mottled appearance (large area and coarse mottling) as the other organ where actual emboli were found. Its pelvis was slightly dilated, and contained a little thick urine.

The *left ureter* was more markedly surrounded and pressed upon by the tumor in the pelvis than the right one. Weight of both kidneys, nine and one-half ounces.

In the *pelvis* was found a large mass which completely filled it, rising above the superior strait, and spreading over into the right iliac fossa; it extended somewhat over into the left fossa, but less. The large intestine passed down behind it nearly in the median line. The principal part of the tumor in the pelvis was a rounded mass made up of cysts, while the part that presented upwards was covered by a cauliflower growth, having a lobulated, uneven surface, colored variously from red to white. There was no evidence that hemorrhage had taken place from this, but from the color of the abdominal fluid (blood-stained serum) gradual oozing was indicated.

The *omentum* was attached to about the summit of this mass, and nearly the whole of its layer was dragged upward and to the left side, where it was bound down by adhesion in the neighborhood of the spleen. There were several large masses in it of similar nature to that in the pelvis.

The *bladder* was tightly adherent to the anterior face of the tumor; its neck was elongated; it did not appear to be dilated; its walls and mucous membrane were normal.

The *uterus* was found to the left of the pelvic mass; it was retroverted and the body still further flexed upon the cervical portion; it was firmly fixed in this position, having been pushed over to the left pelvic wall; the uterus was in contact almost with the walls of the tumor upon the right,

but it was not involved in the diseased change. Its walls were congested but not thickened.

The *Fallopian tubes* could not be found; the tumor from its position seemed to have grown from the right *ovary*. The left ovary could not be found. There were numerous growths upon the *abdominal wall*, both where the peritoneum came in contact with the growth, and also where no such contact could have existed. These growths presented the same appearances as the upper surface of the growth in the pelvis and in the omentum; they varied in size from a split pea to a chestnut. On the anterior abdominal wall, commencing about where there was contact and adhesion between it and the mass in the upper part of the omentum, near the spleen, was found a white cord covered with peritoneum, running downwards, towards line of Poupart's ligament. It branched numerously (four or five bifurcations with smaller branches), and situated on these branches were several of the growths; the largest of them described as appearing on the surface of the peritoneum. No examination of the head was permitted.

January 27th, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, February 10th, 1876.

Report of the Committee on Morbid Growths:

"Your committee find that the specimen of abdominal tumor presented by Dr. James H. Hutchinson is composed of numerous cysts containing fluid, and of a solid portion, which, under the microscope, exhibits the oval, rounded, caudate, fusiform, and multiangular cells, with large nuclei, arranged in an ill-defined, wide-meshed stroma, characteristic of encephaloid carcinoma.

"The dichotomous cord-like body, to which the attention of the committee was also directed, seems to be composed of organized fibrin, with a band of yellow elastic tissue upon one side of it, but presents on transverse section no vestige of central lumen, nor of an auricular arrangement of its constituent structures, such as would indicate a former vascular nature.

"[NOTE.—The patient presented just before her death symptoms indicating the existence of cerebral embolism, but, unfortunately, as permission to examine the head was denied us, this was not positively ascertained.]"

7. *A case of cancer of the pylorus in which great relief followed the washing out of the stomach with dilute alkaline solutions.*

By DR. JAMES H. HUTCHINSON.

The specimens which I have brought before the Society this evening were removed from the body of a woman who died at the Pennsylvania Hospital, January 19th, after an illness extending over more than seven months, during the latter part of which she was under my care.

The following important facts in her history are derived from the daily notes of the case, taken by my clinical clerk, Dr. Morris J. Lewis.

K. M., æt. 31, Irish, married, housekeeper, was admitted to the Women's Medical Ward on October 8th, 1875. Her parents are no longer living, her father having died of a fever, and her mother of a tumor of the abdomen, the exact nature of which cannot be ascertained. With this exception, if it be one, no member of her family appears to have suffered from either tubercular or cancerous disease. Six years prior to the beginning of her last illness she had an attack of rheumatism, for which she was admitted into a hospital, where she remained a year before a cure was effected. During her married life, which lasted about four years, she had two miscarriages and one still-born child. Last June she began to suffer from attacks of faintness, and from pains in the stomach after eating; the latter occurring no matter what the character of the food might be, and being only relieved by vomiting, which generally came on in from one to two hours after her meals. The matters ejected were generally dark-brown in color, but occasionally they were quite black. In addition to these symptoms, she complained, at the time of her admission, of "lumps" in her abdomen, which she said she could feel passing from one side of her body to the other. My colleague, Dr. J. Forsyth Meigs, who first had charge of the patient, sent some of the vomited matter to Dr. J. G. Richardson, the microscopist to the hospital, to determine whether or not it contained red blood-corpuscles; but neither at this nor at any subsequent examination were any found.

At the time of the transfer of the ward to my care, the following note was made: "The patient is emaciated and extremely anæmic, but is said to be stronger than when admitted, the vomiting not being so frequent. A few enlarged glands can be felt in the right groin, but no tumor or induration can be detected in the abdomen, even on deep pressure; and this pressure causes no pain, but excites so much contraction of the muscles that a satisfactory examination cannot be made. The 'lumps,'

of which she complains bitterly, appear to be caused by irregular peristaltic action; they can be distinctly felt and seen passing along the course of the bowel. A ventral succussion-sound is heard when the patient is moved from side to side. Careful examination of the lungs, liver, heart, and of the eyes with the ophthalmoscope, gives only negative results; and the same is true of the examination of the urine."

After having in vain attempted to prevent the vomiting by the use of sulphite of sodium, bromide of potassium, and oxalate of cerium, and the restriction of the diet to lime-water and milk, I determined, on the 24th of November, to make the attempt to nourish the patient by nutritious enemata. Notwithstanding, however, that no food was taken by the mouth, she still continued to vomit, *sarcinæ ventriculi* and starch-granules being found in great abundance in the ejecta, showing that food had been retained in the stomach in an undigested condition for some days. Under these circumstances, I determined to continue the nutritious enemata, but at the same time to have recourse to Kussmaul's plan of washing out the stomach with a dilute alkaline solution, a drachm of bicarbonate of sodium in a quart of water. Wyman's stomach-pump was the instrument to which I had recourse at first; but the use of this, although entirely successful in preventing vomiting, involved the loss of so much time that a Thudichum's douche was substituted for it. This being attached, by means of the india-rubber pipe that generally accompanies it, to the tube which is introduced into the stomach, the alkaline solution was allowed to pass into the stomach by its own gravity. While the tubes were still full, the bottle was suddenly depressed below the level of the patient's body, and, the india-rubber tube being detached from it, a siphon was thus formed, through which the liquid contents of the stomach freely flowed, thus entirely emptying it. This was repeated two or three times at each sitting, without the slightest discomfort to the patient. When first resorted to, the operation was repeated every day; but the accidental omission to do it upon one day showed that once every other day was sufficiently often to prevent vomiting.

When the treatment was first instituted, it will be remembered that the patient vomited after every meal, that occasionally a change of position would be sufficient to cause it, and that even during the time when an attempt was made to nourish her by the rectum, vomiting still took place. On the other hand, from the time the stomach-pump was first employed until her death, a period of rather more than seven weeks, vomiting occurred only twice, or at most three times. During this period she was able to take food freely. She was, of course, allowed as much milk as she

could take, but in addition to this, ate, with relish, toast and egg for her breakfast, and oyster-soup for her noonday meal. It is scarcely necessary to add that the patient was rendered much more comfortable by this treatment. In fact, this was so much the case that after I could no longer doubt the malignant character of her disease, and was therefore disposed to abandon it, she begged that it might be continued. From the time the stomach-pump was first used, until her death, she had at night a hypodermic of morphia, which gave her a comfortable night. She had also an occasional purgative; but with these exceptions there was no medicinal treatment during this time.

The treatment did not, however, only render the patient more comfortable; it enabled me to make a diagnosis, by diminishing the distention of the abdomen, and, secondarily, the extreme irritability of the abdominal muscles. During the third *washing out* I felt a hard body to the left of the median line, just under the arch of the ribs. At subsequent examinations this was always found, sometimes in the median line, and sometimes to the right of this, but never so far over as the normal position of the pylorus. It also changed its position when the patient moved from side to side. The "lumps," as she called them, also occurred less frequently.

The passages, which were very infrequent, and obtained with great difficulty, were fecal, showing that some food passed the pyloric orifice.

The patient died, January 19th, 1876. The *autopsy* was made by Dr. Longstreth, from whose notes I make the following extract:

"The abdomen contained a small amount of fluid in its cavity. There was an old fibrous adhesion on the upper surface of the liver, but no evidence of general peritonitis. The stomach was prominent and partially distended. When completely filled with water, its long circumference was twenty-five and one-eighth inches, and its short circumference seventeen inches. It held, distended, two quarts, one pint, fourteen ounces. At the pyloric orifice was a firm mass, involving the anterior wall and the pyloric end of the lesser curvature, with enlarged glandular masses above and below. The walls of the stomach around the mass appeared thickened, and as if plaited into folds. The glandular enlargements extended into the mesentery, the glands varying in size from a grain of wheat to a horse-bean; on section they were exceedingly firm, and of a uniform white color. The lesser curvature was shortened one-half by adhesions to the mass; the greater curvature seemed markedly extended. The diseased condition ended abruptly with the stomach; the duodenum was bound down by adhesions, and made a sharp turn downwards and to the back. When the

stomach was filled with water none escaped, even when the cardiac extremity was elevated. It was possible, however, by working the fingers up the duodenum, to assist the escape of the water. The water was prevented from passing by the plaited arrangement of the walls of the stomach and the sharp bend of the duodenum. The passage, as the finger passed upwards into the stomach, did not seem much contracted, except by the folds mentioned, and the walls were soft and free from ulceration. On the inner surface of the lesser curvature, corresponding to the hardened mass outside, the mucous membrane exhibited a large ulcer with thickened edges, which affected the whole circumference of the pouch towards the pylorus. The remainder of the mucous membrane was normal, showing no abrasions, ulcerations, or congestion to any marked degree. The muscular fibres were very plainly to be distinguished, and seemed slightly hypertrophied. The œsophagus was very carefully examined, but showed no evidence of abrasion.

"Liver, weight one pound fifteen ounces. Its outline was regular, and its upper surface was notched by a deep furrow, showing white fibrous tissues. On section, the tissue was of a reddish slate-color and firm, and considerable blood flowed from the hepatic veins. In the right lobe, on its lower surface, anteriorly, between the round ligament and the gall-bladder, which latter was partly adherent to it, was a firm, white nodule, measuring one and a half inches in diameter; it was irregularly nodulated, and extended into the liver-substance about one inch. On section it was found exceedingly firm, almost cartilaginous, at points showing the calibre of vessels. The tumor was dry, exuding no juice."

The other organs were healthy.

Dr. Longstreth has omitted to mention, in his notes, the fact that the obstruction at the pyloric orifice was complete only when the stomach was fully distended; when it was partially emptied the water ran into the duodenum freely enough. It would seem, from this, not irrational to suppose that the washing out of the stomach was useful partly by preventing this extreme distention and thus allowing food to pass into the duodenum.

February 10th, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, February 24th, 1876.

Report of the Committee on Morbid Growths:

"Thin sections cut from the tumor of the stomach, presented by Dr. James H. Hutchinson, exhibited, when microscopically examined, nests of cells, rounded, oval, and caudate, often furnished with large nuclei, and

arranged in the meshes of an abundant fibrous stroma, the trabeculæ of which bear in thickness, as compared with the diameter of the alveoli they enclose, that proportion usually assigned to hard cancer. The specimen is therefore unquestionably one of scirrhus ventriculi.

"The tumor in the liver, from the same case, displays similar cell-elements, embedded, however, in a scantier stroma, which nevertheless is more abundant than that commonly possessed by secondary neoplasms in the hepatic parenchyma."

Although this plan of treating chronic diseases of the stomach was brought to the notice of the profession so long ago as 1867, it seems to have excited singularly little notice in this country. In cases of dilatation of the stomach dependent upon long-continued catarrh, it is said by Kussmaul, its originator, to be alone sufficient to effect a cure. In the case which I have reported to-night, it could, of course, do nothing more than give relief; and this it certainly did. Notwithstanding the gagging which was caused by the passage of the tube through the pharynx, the patient not only consented to its introduction, but positively demanded it.

The following conclusions would seem to be properly deducible from the history of this case:

1. That washing out the stomach will be useful in dilatation of that organ dependent upon stricture of the pylorus, even if this be due to malignant disease, by lessening the frequency of the vomiting.
2. That it diminishes the intensity of the pain, by preventing extreme distention of the stomach and by the removal of its irritating contents.
3. That it renders possible the introduction of food into the stomach, and its digestion.
4. That it may sometimes facilitate diagnosis.

8. *Gummy tumors in the liver.*

By DR. JOHN M. KEATING.

These specimens were taken from a patient, æt. 40, who had long been an inmate of the Philadelphia Hospital, at first as an assistant, finally as a patient. The history of the case was an ordinary one of hepatic cirrhosis coming on in a person who had been addicted to the abuse of alcohol. He positively denied any history of syphilis. The particular interest attached to the specimen is due to the gummy-like tumors which are seen here and there throughout the liver, and which seem to indicate for the cirrhosis a specific cause.

February 10th, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, February 24th, 1876.

Report of the Committee on Morbid Growths :

"The microscopical structure of the abnormal growths found in the liver presented by Dr. Keating consists of a central mass of closely-packed granular debris and fat-granules, amongst which may be seen an exceedingly scanty fibrillated tissue. Surrounding this, and directly joined with it, is a more completely fibrillated structure, whilst the peripheral portions of the growth, which are continuous with the surrounding hepatic substance, consist entirely of fibrous material and small, round cells,—the granulation or 'indifferent cells' of authors. The growths, therefore, are to be classed under the gummata."

9. *Section from a Peyerian patch in the stage of medullary infiltration.*

By DR. FREDERICK P. HENRY.

The specimen under the microscope, taken from a patch in the stage of medullary infiltration, exhibits the acme of the characteristic lesion of typhoid fever. Any further change which may take place in the deposit is of a retrogressive nature. The cellular infiltration may undergo a gradual disintegration and be absorbed, or it may perish *en masse* and form a slough, to be loosened and cast off by a suppuration at the periphery of the follicle or patch. I would suggest that, in individual cases, the result may be largely influenced by the degree of severity of one of the most constant symptoms of typhoid fever. I have reference to the diarrhœa, or, more strictly speaking, to the attendant peristaltic contraction of the intestinal muscular coat. The pathology of gastric ulcer will illustrate my meaning. That lesion has its origin in a hemorrhagic infarction caused by interference with the circulation by the contraction of the muscular coat of the stomach, during violent and long-continued efforts at vomiting. We have a precisely similar arrangement of the circulation in the intestine. Supposing one of the diseased patches, in a case of typhoid fever, to have attained its acme, what is to be the fate of the deposit? Is it to be gradual disintegration and absorption, or sudden death and separation? This question, I venture to suggest, is decided by the amount of peristalsis present. If this be slight, the pressure of the deposit upon its own nutrient vessels is the principal factor in the necrobiotic process, and gradual disintegration and absorption ensue; on the other hand, if to this pressure

be added an excessive amount of peristalsis, sloughing of the whole mass will result. It might be objected that we have no facts which warrant the supposition that the intestinal contraction can interfere to so great a degree with the circulation. For example, it might be urged that we have nothing in the intestine resembling gastric ulcer. Admitting this to be true for one moment, for the sake of the argument, I would reply that the vermicular nature of the contraction in the small intestine precludes the possibility of a sudden hemorrhagic infarction from this cause alone. But is it true that in the *entire* intestinal tract we have nothing similar in its etiology to gastric ulcer? When we consider that the most frequent site of simple intestinal ulceration is the rectum, and that this ulceration coincides with a violent tonic, although periodic, contraction of this portion of the tract, it seems impossible to deny that there is a causative relation between these two phenomena.

Under ordinary circumstances, we have nothing similar to this in the small intestine, but in typhoid fever a vermicular contraction of the ileum may have all the significance of a tonic contraction of the rectum in dysentery. For example, a Peyerian patch is at the height of the stage of medullary infiltration; its reticular spaces are crowded with cells, and the natural retrograde process of slow disintegration is about to begin; at this moment diarrhoea sets in, from some error in diet perhaps, and for a few hours there is considerable peristaltic contraction. I believe that this additional impediment to the circulation may be sufficient to alter the nature of the retrograde process and convert it, from a gradual disintegration, into a sudden necrosis.

Certain well-known facts in the pathological history of typhoid fever may be adduced in illustration of this *peristaltic theory*. It is observed by all writers upon the subject that the follicles occupying the lowest portions of the ileum are the earliest affected, and that, in them, sloughing occurs in a direct ratio with their degree of vicinity to the ileo-cæcal valve, but, so far as I know, no attempt has been made to explain these facts. The first fact explains itself. The disease begins earliest in the lowest follicles because they *are* the lowest, *i.e.*, because they are farthest removed from the centre of the circulation. This is not immediately apparent, owing to the anatomical arrangement of the small intestine upon the convex border of the fan-shaped mesentery, which causes all its parts to be equidistant from the mesenteric attachment; but a glance at the vascular distribution will show that the ileum is supplied by the terminal twigs of the superior mesenteric artery, and that the superior mesenteric vein has its origin in the lowest portion of this division of the small intestine. The

general catarrh which ushers in the intestinal lesions is therefore, from the beginning, more intense in the neighborhood of the valve, owing to this natural tendency to a mechanical hyperæmia.

The same facts, taken in connection with the *peristaltic theory*, explain the more frequent occurrence of sloughing in the lowest portions of the ileum. Suppose a follicle, two feet above the ileo-cæcal valve, to have arrived at the height of the stage of medullary infiltration; at this moment a succession of peristaltic waves traverse the ileum; they may be insufficient in number and duration to cause sloughing of the mass, but transfer it to the neighborhood of the valve and the case would be different. The effect upon the circulation of a peristaltic wave gradually increases in intensity as we approach the valve, owing to the gradually increasing impediment to the return of venous blood, and sloughing gradually becomes more extensive in the same direction. The bearing of these views upon the treatment of typhoid fever is obvious. Although the severity of the fever does not depend upon the extent of the intestinal lesions, I think no one will deny that, apart from the danger of perforation, an important indication for treatment is to moderate the severity of the lesions. If we wished experimentally to infect the system by the introduction of putrid material through the lymphatics, we could adopt no better method than one which would imitate, as closely as possible, the conditions that exist during the sloughing stage of typhoid fever. In short, we would place decomposing material at the *periphery* of some portion of the lymphatic system, where, consequently, the greatest number of lymphatics would come simultaneously in contact with the poison. The drug which has been used so successfully to allay peristaltic action in peritonitis is the one indicated here. I would advocate the habitual use of opium and its derivatives in typhoid fever, with the view of allaying peristalsis and consequently diminishing the risk of sloughing and perforation. This is contrary to the doctrine of the Viennese school, which holds that the intestinal lesions are the result of the casting out of a *materies peccans* from the blood; but such a doctrine is contrary to all that we know of the physiology of the absorbents, which are pre-eminently afferent vessels.

The diarrhœa of typhoid fever may even be charged to peristalsis, as is the diarrhœa of cholera (*Rindfleisch*); but, as this is not an essay on the treatment of typhoid fever, I will say no more at present in favor of a regular administration of opium in that disease.

The intestinal lesions of typhoid fever illustrate the importance of studying the gross as well as the microscopic appearances of disease. The gross appearances are here far more characteristic than the minute. The speci-

men under the microscope shows a universal enlargement of the glandular elements, a partial disappearance of the reticular frame-work, and the large multinucleated, myeloid, or giant cell, none of which appearances, either singly or combined, can be considered characteristic of typhoid fever.

The myeloid cell is a normal constituent of the medulla of bones, and is also found in phthisis and in myeloid sarcoma, while the combined appearances are found in an ordinary non-specific, acute lymphadenitis. In phthisis, it may be remarked as an interesting fact, this cell is found in combination with a pathological adenoid tissue.

These cells are best seen in the border of the field, where their contours are not obscured by the neighboring elements.

The power used is one of about four hundred and fifty diameters.

Dr. Wm. Pepper said it was unquestionably true that, in most instances of enlargement and inflammatory changes in lymphatic glands, they follow some local irritant at the beginning of the lymphatic tract. But it is also recognized that in cases of blood-poisoning, where the blood is highly charged with morbid substances, morbid processes may be brought about without such primary local irritation. The view that the changes in Peyer's patches are due to the absorption of matters of a morbid character is not impossible where the disease has followed the absorption of tainted drinking-water or food; but there are other cases in which it always seemed to him that the lesion must be explained as the result of a constitutional infection.

With regard to the probable cause of sloughing, he thought that a considerable number of observations would be necessary to prove it the result of such weak peristalsis as we have at the lower end of the ileum; and, although it is generally true that the follicles nearest the ileo-cæcal valve are the first to ulcerate in typhoid fever, it is by no means invariably so, as he had frequently met patches considerably above this valve which were much more deeply ulcerated than those below them and closer to the valve. Further, as a matter of clinical observation, in his own experience, perforation and hemorrhage had occurred from extensive sloughing in cases of typhoid fever where constipation had existed, rather than diarrhoea, or at least where diarrhoea had not been prominent. In the last case of perforation he had met, there was constipation from the very beginning, and the bowels had never been moved except by enema or by oil, and the stools were always consistent.

As to the therapeutics of typhoid fever, Dr. P. preferred a soluble condition of the bowels, one or two stools daily, rather than to control them by the administration of opium, at least in any quantity.

Dr. Henry said he knew that pathological writers generally did not consider that the disease began in the lymphatics, but that it is ushered in by a catarrh of the mucous membrane of the intestine, followed by an inflammatory state, which becomes centred in the Peyer's patches.

With regard to the strength of the contraction of the muscular coat, he thought that the slightest possible amount of contraction might turn the tide in favor of sloughing, if the gland had arrived at such a degree of infiltration as to be at the turning-point at which it would either go into necrobiotic death with absorption or into sloughing. Again, with regard to perforation occurring high up, he was inclined to look for a similar local cause for such an anomaly, as *e.g.*, enlarged mesenteric glands, which might press more upon the blood-vessels returning from the perforated portion, thus emphasizing the lesions in that situation.

Dr. Henry further said, if he recommended the administration of opium, he did not desire to abandon the use of cathartics, but would prefer to use those which would favor osmosis from the blood-vessels, as the salines, rather than those which act by increasing peristalsis, as oil does.

Dr. Jos. G. Richardson said that he thought the diarrhoea was apt to come on (perhaps more from inflammation of the mucous membrane than from errors of diet) at a time when the necrobiotic condition had not attained its height; also, that in his own experience he had found the diarrhoea frequently worse in the first week, and diminished towards the third week. He also felt able to confirm Dr. Pepper's statement that perforation and hemorrhage were more apt to occur where the diarrhoea was slight than where it was free.

Dr. Henry did not intend to give the impression that he thought diarrhoea was absent at the beginning of the fever. He favored, also, keeping the contents of the intestine soluble, and thus allowing them to pass to the rectum with the least possible amount of peristalsis. He did not think the function of defecation, which is intended to empty the rectum, would interfere with the return circulation from the ileum, but might even favor it by the pressure exerted from without by the abdominal muscles.

Dr. Richardson thought with Dr. Henry, that in cases where it just hangs in the balance as to where perforation shall take place, some very slight influence, as muscular contraction, might become the determining cause of the perforation.

Dr. C. B. Nancrede then said that he thought that Dr. Pepper underrated the thickness of this coat, even in comparison with that of the stomach. It consists, as does that of the stomach, of a circular and longitudinal layer. In the stomach the circular layer is perfect, but the

longitudinal quite the reverse, as represented by the longitudinal and oblique fibres.

If this arrangement in the last-mentioned organ could so interfere by its contraction with the circulation of the blood as to produce hemorrhagic infarction, surely the perfect circular and perfect longitudinal coats of the intestine could also effectively interfere with the return circulation in an inflamed Peyer's patch. In reality, the perfect *longitudinal* coat, in addition to the circular, was a much more effective arrangement for interfering with the venous circulation than the perfect circular but imperfect longitudinal muscular coats of the stomach.

Dr. James Tyson thought the mistake lay in adopting too exclusive a view as to the immediate cause of the ulceration in typhoid fever. While he thought it impossible to deny that the intensity of the action of the blood-poison, whatever its true nature, could be so great as to cause such an inflammatory proliferation of the elements of the Peyerian follicles as of itself to produce compression on the blood-vessels and resulting necrosis, it is nevertheless not impossible that at a certain stage the additional hyperæmia due to muscular contraction might be the determining cause of the necrosis.

Dr. Henry remarked that since we have the operation of a similar contraction acknowledged to be the cause of ulceration in the stomach, it is certainly not unreasonable that such contractions should act similarly on the small bowel.

Dr. Richardson said that the force with which an invaginated gut is sometimes held shows that there may be considerable power in the contraction of this bowel.

Dr. Tyson thought that some of this close adhesion met with in invagination was inflammatory.

Dr. John Guitéras said that he had not heard Dr. Henry's paper, but, from the ensuing discussion, he thought the doctor was extending the views, as to the pathology of gastric ulcer, of Rindfleisch, who gave great importance to the action of the muscular coat in keeping up the engorgement of the mucous membrane, in catarrhal inflammations of the intestines. As regards perforations, he did not think that the muscular action could be of importance, because perforations are less frequent in dysentery, when peristaltic action is greatest. In typhoid fever, the condition of the muscular coat was more one of paralysis.

Dr. Nancrede referred in this connection to the result of Mr. Hutchinson's *post-mortem* examinations in cases of invagination. This gentleman has reported some cases of his own, with several of other observers,

where, after the usual treatment by injection of air and fluids, death ensued with the bowels still unreduced. Yet, although the duration of these cases extended over several days, the *autopsy* revealed so slight, if any, adhesions that the bowel could readily be pulled out, comparatively unchanged. Mr. Hutchinson's cases were reported only with a view of showing the feasibility of restoring the bowel to its normal position by abdominal section, but Dr. Nancrede thought that they supported his view of the strength of the muscular coat being greater than we generally think, for it sufficed to prevent the return of the bowel to its proper position, even after considerable force had been exerted by the injection of air and fluid.

Dr. Pepper did not wish to depreciate the importance of the contraction of the muscular coat of the small intestine. He was disposed to agree with Dr. Tyson in regard to the part taken by the muscular coat in maintaining an invagination of the bowel. He had never met perforation of the bowel in dysentery except when it accompanied quite extensive sloughing of the coats of the intestines with evidence of the extension of inflammation to the cellular tissue surrounding the bowel, indicating that the perforation was caused by the progressive destructive ulceration of the coats of the intestines. Finally, he did not think the pathology of gastric ulcer was by any means settled, and he was not himself ready to admit that it is caused by hemorrhagic infarction in all cases.

Dr. Henry said that he had presented to the Society, a year ago, a case of gastric ulcer which accompanied cirrhosis of the liver, and at that time he asked the question whether this association might not be more frequent than is usually supposed. He felt inclined to believe that such is the case.

He desired to know whether, in the experience of members, there is not a greater tendency to congestion in the lower part of the ileum, diminishing as we ascend, and whether it is not possible that mechanical hyperæmia may influence sloughing.

Dr. Pepper was inclined to suppose so; yet simple perforating and cachectic ulcers (non-tuberculous) which appear analogous to ulcer of the stomach are more frequently found in the duodenum and upper part of the ileum than near the ileo-cæcal valve.

Dr. Richardson suggested that the fact that in typhoid fever the patient is almost always in the recumbent position would have some bearing upon the occurrence of mechanical hyperæmia, diminishing a tendency thereto in the lower portion of the small intestine.

Dr. Henry replied that the blood had to go the same round, no matter what the position of the patient, and that therefore his posture could have little to do with it.

March 23d, 1876.

10. *Perforating or corrosive ulcer of duodenum.*

By DR. M. O'HARA.

Was called to see Margaret McG., 40 years old, at four A.M., March 22d. Did not get there until ten A.M. The statement was made that she had often suffered from similar spells of violent vomiting. She had received medicine during the morning from a drug-store, which had relieved her. I found it to be an opiate, and recommended it to be resumed if pain returned. Ordered twenty grains calomel and castor oil. Diagnosis was obstruction of bowels; the peculiar cause of obstruction not as yet made out.

On the 23d, was worse; no vomiting, but acute pain in epigastric region, extending to spine and region of liver; intense tenderness to touch, of surface of abdomen, notably in region of stomach and liver. There had been no movement of bowels, though active cathartics had been given sufficiently,—salts and castor oil,—and not ejected.

Leeches and hot fomentations ordered, with calomel and free opiates. During the day two visits were made; general tenderness and the pain, which remitted at times, continued. At eight o'clock P.M., was dying from shock and peritonitis. The true cause was unsuspected, but everything indicated perforation from obstructed bowels, a rupture in their texture. She had been constipated by this time seven days, and actually sick, or complaining, almost four days.

Post-mortem examination revealed a well-developed subject with much adipose tissue.

The abdomen was arched with gas from peritoneal cavity, of offensive odor, which escaped with a rush on puncture. The peritoneal effusion was considerable, and had the appearance of intestinal fluid, of a light-brownish color. The odor was not fecal, but somewhat offensive. There were evidences of general peritonitis; the membrane being reddened more on the visceral than on the parietal surface. Patches of recent lymph covered the intestines at numerous points. There were old adhesions between liver and diaphragm. The duodenum was adherent to the liver by old bands which had to be ruptured forcibly, though presenting no connection with the ulcer about to be described. There was no evidence of disease present in any of the abdominal organs, except in upper anterior wall of duodenum, at which point was an opening with clean-cut smooth edge, as if made by a punch, nearly one-fourth of an inch in diameter. The contents of the stomach could be compressed through this, and ran

through it before death. There was no other ulcer in stomach or in any of the intestines.

The difficulties of diagnosis in abdominal affections, and the mistakes often made, oblige us to gather all the information on these matters that we can. Here, without an *autopsy*, I would have known nothing of the cause of death, and of the initial cause of the ulcer we know nothing. Corrosive ulcer of duodenum seems to be quite rare. So far as I know, no case has been before exhibited to this Society. It has no definite symptoms of its own, and it may be more common than we think. In this case the cause of death might easily have been overlooked and the whole ascribed to an idiopathic peritonitis. I think it quite likely I might not have noticed it unless aided by the vigilant eye of my friend Dr. Willard, who conducted the *post-mortem* examination.

But little has been written of it. Dr. Da Costa, in his "Medical Diagnosis," speaks thus of ulcers of the stomach: "There is a disorder with symptoms almost identical with gastric ulceration, namely, the corrosive ulcer of the duodenum. Now, this affection, were it more frequent, would be a constant source of error in diagnosis. It may run an acute, or at least an apparently acute, or a chronic course. In either case it is scarcely distinguishable from gastric ulceration." He refers to Trier's analysis of twenty-six cases, and speaks of signs of dilatation of the stomach and a sensitive tumor in the epigastrium from adhesion with the pancreas, jaundice, etc., as means of differential diagnosis. He states that, with our present means of research, in those chronic cases which run a latent course the diagnosis is impossible. It is more apt to remain latent and lead to sudden and fatal termination than the ulcer of stomach.

Krauss has written a monograph on the subject which I could not obtain.

Niemeyer states that the disease is probably not very rare; that a *necrosis* occurs, and then a solution of the necrosed part of the intestine by the gastric juice takes place. It is more frequent in men than women, the reverse of what occurs in the stomach. In one thousand cases of various *autopsies* at Prague Institute, perforating ulcers occurred twice, while in seventy-four cases there were ulcers or their cicatrices. He gives the various symptoms ascribed, but I think what Dr. Da Costa has stated nearly covers the substance of our knowledge of this affection.

April 13th, 1876.

11. *Case of ranula.*

By DR. JOS. G. RICHARDSON, for DR. WALTER F. ATLEE.

The patient was a young man about 21 years of age, who had been laboring under the disease about one year. The tumor projected under the chin the size of the large end of a goose-egg, and elevated the tongue so that articulation was very indistinct.

A French exploring trocar was introduced, but only a drop of fluid came out. A hydrocele trocar brought away about three ounces. The canula then slipped out before it was quite emptied.

The patient left to attend to something in the country, intending to return at the end of two weeks.

Microscopical and chemical examination, by Dr. J. G. Richardson.

The contents of the ranula as removed by Dr. Atlee consist of a yellowish viscid fluid, in which float an immense number of rounded bodies of a whitish color, varying from $\frac{1}{8}$ to $\frac{1}{100}$ of an inch in diameter, and at first sight presenting the aspect of minute salivary calculi.

On heating them, however, upon platinum-foil, they swell up with some crepitation, then turn black, and finally are consumed, leaving a scarcely perceptible trace of inorganic material. During combustion, the light emitted displayed a very bright sodium line when viewed with the micro-spectroscope. Hence they appear to be composed chiefly of organic matter, with a small quantity of some soda salt, and perhaps a mere trace of lime.

Under the microscope, the fluid is seen to be filled with leucocytes, fatty epithelial cells, and peculiar minute rice-shaped bodies averaging perhaps $\frac{1}{2000}$ of an inch in length, whose nature was not determined.

I may add that on consulting Dr. James E. Garretson this morning, I was informed that he had never met with a case in which these minute concretions were present; but in his comprehensive "System of Oral Surgery," I find he refers to an instance reported in "Bell's Principles of Surgery," where the viscid contents of a ranula included "numerous seed-like bodies," which may have been analogous to those visible in the specimen just presented.

April 13th, 1876.

12. *Perforating ulcer of the stomach.*

By DR. F. H. GROSS.

The specimen of perforating ulcer of the stomach which I have to exhibit was taken from the body of a German, a cabinet-maker, æt. 54 years. The case was never seen by me during life, and, although its history is not as complete as might be wished, the specimen itself, with the account I am able to furnish, may be of interest to some of the members of the Society.

By a friend of the deceased I am informed that the latter's health had not been good for at least ten years; he generally suffering from some derangement of the stomach. During all that time the patient applied only once, about five or six years ago, to a physician for medical aid. He received but one prescription, and was told that his disease was dyspepsia. About the same time, but whether immediately before or after applying to the physician I could not learn, he had a hemorrhage, which my informant described as a "rush of blood from his mouth and nose." This was followed by considerable relief, and he remained in better health for two years; but he continued to complain of a sense of pressure over the region of the stomach. For several months prior to his death his health was noticed to be decidedly bad. The pain and oppression over the epigastrium had greatly increased, and he raised, especially in the morning, a quantity of purulent matter. No solid food of any kind could be taken into the stomach without causing great distress, and he therefore subsisted mainly upon soups and large quantities of lager beer. The latter article he said not only rested easily upon his stomach, but gave him considerable relief, and induced him to indulge in it to an immoderate extent. It may be of interest to note that vomiting is said never to have been one of the symptoms of his disease.

On the morning of the 10th of last month (March), the day of his fatal attack, he appeared better and more lively than he had been for some time, and went to work as usual, as he rarely permitted his disease to interfere with his labors. But while talking quietly with a friend in his shop on the day alluded to, he was suddenly seized with violent pain in the abdomen. The account given of the condition that immediately followed is rather vague. A neighboring apothecary was applied to in the emergency. The patient was in great agony, and suffered excruciating pain on being removed to his residence in a carriage.

Dr. J. M. Eagleton, of this city, was called in on the same evening, and

remained in charge of the patient until he died. He was prevented from being present at the *autopsy*, but has kindly furnished me with the following statement :

"I was called to see the patient on Friday night, 10th of March, about nine o'clock. Found him lying on his back with knees flexed, surface pale and bathed in perspiration, pulse 128 and quite weak; complaining of great pain, especially in the epigastrium, but extending over the entire abdomen and up the left side of chest and neck; excessive tenderness on slightest pressure, with hard and board-like condition of the walls of the abdomen. His tongue was dry and brownish; he had no nausea or vomiting. His sufferings were greatly increased by any movement of body."

Dr. E. further states: "I applied hot fomentations and placed the patient under the influence of opium. There was no change in his condition on Saturday and Saturday night, except that he suffered less pain, his pulse becoming weaker and more frequent. He died on Sunday morning, about thirty-eight hours after my first visit."

This comprises the history of the case while under the observation of the gentleman named, who also had no previous acquaintance with patient.

The *autopsy* was made about sixty hours after death, by Dr. James Collins and myself. The body was emaciated, but not extremely so. The cavity of the abdomen was found to contain a quantity of thick yellowish fluid, which had escaped from the stomach through the perforation seen in this specimen. The position of ulcer is in the anterior wall and very near the lesser curvature of the stomach, and nearer the cardiac than the pyloric opening of that organ. The ulcer is round, and presents the usual dish-like appearance of these lesions. The diameter of the opening on the inner and mucous side is one inch, and gradually contracts so as to leave the perforation in the peritoneal covering a quarter of an inch in diameter. A short distance from this lesion is another of more recent date, and which appears to have involved only the mucous coat.

The other organs of the abdominal cavity appeared to be in a healthy condition, as did also those of the chest.

April 13th, 1876.

13. *Ulceration of the intestines from a case of typhoid fever.*

By DR. JOHN M. KEATING.

The specimens which I have the honor to exhibit to the Society this evening were removed last week from the body of a man who died in the

Philadelphia Hospital. C. C., æt. 20, was admitted to the medical ward on March 12th. Belonging to that class of migratory individuals who prefer to wander from town to town, with an occasional sojourn in a poor-house or hospital, to any steady occupation, he had been much exposed to the inclemency of the weather, and as to nourishment he stated that he scarcely ever saw anything which deserved the name. The day previous to his admission he had walked from Newark, N. J. His main complaint was extreme weakness, and the truth of it was made evident by the great pallor of his countenance and the feeble pulse, which was quick and almost imperceptible. In addition to this, he suffered from sore throat; upon examination the pharynx was found much congested, the papillæ enlarged, the left tonsil slightly ulcerated, but no membrane was to be seen. There was no headache, no abdominal symptoms. He was ordered the best diet, rest, tincture of iron, and chlorate potas., and upon this treatment he seemed for a few days to improve.

At the end of a week the attention of the resident physician was called to the fact that our patient had diarrhœa, and that the stools were watery and freely charged with a dark coffee-ground deposit, which proved to be blood. On the 21st of March, nine days from the date of admission, the temperature in the axilla rose to $103\frac{1}{2}^{\circ}$. At six o'clock on the same evening it was 105° ; this being the first evidence which we had of any distinct febrile action, though previous to this no thermometric examination had been registered. Next morning the thermometer marked 103° . When I saw him at ten o'clock, he was in the following condition: the pulse was quick, exceedingly weak, but regular; the tongue was heavily coated, dark and dry. There was great difficulty in swallowing, from the parched condition of the entire pharyngeal mucous membrane. There had been some epistaxis, though this had been partially checked, slight oozing still continuing. He did not complain of headache; the face was not flushed, nor had the eyes that dull, heavy appearance so characteristic of typhoid fever.

Careful examination was made of the abdomen. No eruption was seen, but deep pressure revealed tenderness to a very slight degree in the right iliac fossa. This was never afterwards noticed, though at each visit it was carefully sought after. The lungs were healthy, with the exception of a slight bronchitis. A diagnosis of typhoid fever was made; the patient placed upon large quantities of milk; the whisky increased to ten ounces in twenty-four hours, and a mixture given of twenty drops of dil. nitro-muriat. acid and twenty drops of tinct. ferri chlor. every two hours which it was hoped would control the diarrhœa, which amounted to about ten passages during the day. At six o'clock his temperature was $105\frac{1}{2}^{\circ}$.

Next morning (23d) the temperature had fallen to 103° . Epistaxis had required large doses of ergot and gallic acid to control it. He had taken his nourishment well, but seemed exceedingly weak. That evening, temperature 105° .

24th.—Morning temperature, 103° ; evening, 104° . The diarrhoea was replaced by solid stools, light in color, but exceedingly offensive. This change may have resulted from the ergot and gallic acid. No eruption.

25th.—Temperature in morning, $103\frac{1}{2}^{\circ}$; evening, $105\frac{1}{2}^{\circ}$.

26th.—Morning temperature, $104\frac{1}{2}^{\circ}$. Half an ounce of whisky was ordered every hour, tinct. digitalis every two hours, ten drops. Evening temperature, 103° .

27th.—Morning temperature, 102° ; evening, 105° . During this time the pulse had been averaging from 120 to 150,—exceedingly weak and gaseous. The heart-sounds had lost to a great degree their muscular element, and fatty degeneration had been noted.

28th.—Morning temperature, $103\frac{1}{2}^{\circ}$; evening, 102° .

29th.—Morning temperature, $102\frac{1}{2}^{\circ}$; evening, $104\frac{1}{2}^{\circ}$. One ounce of whisky was now ordered every hour. There was no marked dulness of intellect, but, owing to the slight delirium which occurred at night, and a tendency during its continuance to get out of bed, a nurse was specially deputed to watch him.

30th. Six A.M.—Temperature, $101\frac{1}{2}^{\circ}$. No diarrhoea. Six P.M., $103\frac{1}{2}^{\circ}$.

31st.—Morning temperature, $101\frac{1}{2}^{\circ}$; evening, $101\frac{1}{2}^{\circ}$.

April 1st.—Morning temperature, $99\frac{1}{2}^{\circ}$; evening, 101° . Pulse 72, but very weak. Patient seemed convalescent.

April 2d.—Pulse 130, owing to his having gotten out of bed during the night while the nurse was asleep. Evening temperature, $101\frac{1}{2}^{\circ}$. Whisky increased to one and a half pints in twenty-four hours.

April 3d.—Morning temperature, $99\frac{1}{2}^{\circ}$. In the afternoon, while the nurse was attending to duties in another part of the ward, patient rose from his bed and dropped dead.

The peculiar interest attached to this case is due to the fact of the extensive fatty degeneration of the heart found *post-mortem*, and to death occurring in convalescence from this cause, thus permitting an examination of the intestine at a stage when the reparative process has set in.

Dr. Morris Longstreth wished to call attention to the form which the ulceration presented. In some of the ulcers the greatest length was placed transversely in the gut, the Peyer's patch being broader than long.

Dr. John Guit ras said he had observed this in making the *post-mortem* examination, but on raising the intestine to the light, the oval shape of the

infiltration became evident in the longitudinal direction. He had noticed the same peculiarity in a case which he examined the following day, the cause of death here being intercurrent pneumonia. The large intestine in the latter case also contained many ulcerated follicles, showing in these two cases a tendency of the disease to be seated in the solitary glands.

Dr. Longstreth said he had also met exceptions to the usual statement that the Peyer's patches were always found opposite to the attachment of the mesentery. Particularly had he found that in the neighborhood of the ileo-cæcal valve the patches were placed on the side of the intestine towards the attachment of the mesentery: especially was this the case on the lips of the valvular opening.

April 13th, 1876.

14. *Scirrhus of the rectum.*

By DR. WILLIAM PEPPER.

W. C. P., æt. 55, a miller by occupation, had enjoyed general good health until October, 1874. He had never contracted syphilis, and had no hereditary predisposition to cancer or tuberculosis.

At the time above stated, he first noticed some difficulty in evacuating the bowels, with frequent disposition to go to stool, but with the passage of only a small semi-fluid stool, at times mixed with a good deal of mucus. He had lost fifteen pounds of flesh, was somewhat pale, but had no cachectic appearance. Early in March, 1876, two large internal hemorrhoids were removed by ligature.

I first saw him March 20th, and, suspecting from the symptoms some obstruction of the rectum, made a digital examination, which revealed an elastic, indolent, hard mass, apparently spheroidal, and about $1\frac{1}{2}$ inches diameter, situated three or four lines above the anus, and occupying the whole circumference of the bowel. There was an aperture in the centre, of slit-like character, fringed with small polypoid growths. He was directed suppositories of acetate of lead and belladonna, Friedrichshall water, and cautious dilatation if stricture increased. Within a fortnight symptoms of complete obstruction made their appearance; a bougie was passed through the stricture without affording any relief, and, after a continuance of these symptoms for a few days, death ensued. At the *post-mortem* examination, the colon was found enormously distended with gas, but with very little fecal contents. The connective tissue surrounding the rectum was much thickened and condensed. On cutting open the bowel, a mass

of scirrhus growth was found about three or four inches above the anus, involving the submucous tissue and extending to the outer coat of the bowel and the surrounding cellulo-fatty tissues. An ovoid tumor about the size of a hen's egg was thus formed. The entire circumference of the bowel was involved, with the exception of a narrow space on the anterior wall. The submucous growth projected into the bowel, causing marked obstruction of its lumen, and leaving only a slit-like aperture. This was of sufficient size, however, to permit the passage of some solid fæces; but at the autopsy it was found that the fringes of thickened mucous membrane which projected around the margin had become so arranged as to cause complete occlusion. There was no ulceration of the mucous membrane, nor any free growth upon its surface.

Dr. Ashhurst said that strictures of the rectum, as of the other hollow tubes of the body, often produced much greater impairment of function than could be accounted for by the degree of mechanical obstruction present. Thus, in the case of the rectum, though the stricture might permit the passage of an instrument, the propulsive power of the gut might be so much lessened as to render defecation very difficult. This loss of propulsive power also permitted the accumulation of fecal matter below the stricture, thus leading to irritation which might give rise to fecal incontinence, and sometimes led to the formation of fistulæ, which, as was well known, often had their internal openings in these cases below the seat of stricture.

April 13th, 1876.

15. *The intestinal lesions of typhoid fever.*

By DR. FREDERICK P. HENRY.

At a recent meeting of the Pathological Society, I exhibited under the microscope a section of a Peyerian patch in the stage of medullary infiltration, and read a paper in which I attempted to explain why it is that the intestinal lesions of typhoid fever gradually increase in severity as we approach the ileo-cæcal valve, an attempt which, I believe, has not been made hitherto.

As I do not flatter myself that my views made sufficient impression to be readily recalled by the gentlemen who were present at that time, and as there may now be present some who were then absent, I shall give a brief *résumé* of my paper.

Starting from the pathology of gastric ulcer, as taught by Rindfleisch, who, I think, has demonstrated that that lesion has its origin in a hemor-

rhagic infarction of the healthy mucous membrane of the stomach during violent and long-continued emesis, I endeavored to show that a similar result might be produced in the diseased mucous membrane of the ileum by a similar interference from peristaltic contraction of that division of the alimentary canal.

From the fact that the superior mesenteric vein has its origin in the lowest portion of the ileum, it required no great degree of temerity to venture upon the assumption that there is in that portion of the tract a tendency, gradually increasing from above downwards, towards a mechanical hyperæmia.

Thus I endeavored to explain the well-known gradation of the lesions by, first, the peculiarity of the vascular distribution, to which natural tendency is added, secondly, in the great majority of cases, an abnormal amount of peristalsis. The first question is more strictly pathological; the second has an evident bearing upon treatment.

The following illustration, made use of in my last paper upon this subject, will explain in a few words my views as to the effect of peristaltic contraction upon these lesions. Suppose a follicle two feet above the ileo-cæcal valve to have arrived at the height of the stage of medullary infiltration; at this moment a peristaltic wave traverses the canal; it may not be sufficiently powerful or long-continued to cause sloughing of the mass, but transfer it to the neighborhood of the valve and the case will be different. The effect of a peristaltic wave gradually increases in severity as we approach the valve, owing to the gradually increasing tendency to mechanical hyperæmia, and sloughing gradually becomes more extensive in the same direction.

In conversation with a gentleman for whose opinion in pathology I have the highest respect, it was intimated that Rindfleisch's theory of gastric ulcer, although extremely plausible, was open to criticism. I take this opportunity of replying that old theories hold good until a greater number of facts support a new one. But is not Rindfleisch's theory proven by the facts? Who can read the case reported in his Treatise on Pathology without being convinced? A man came to the surgical clinic at Bonn, with strangulated inguinal hernia; there was violent vomiting of "bilious, afterwards bloody-striped matter;" death occurred in about thirty-six hours from the time of admission, and at the *autopsy* was found a number of recent hemorrhagic infarctions of the stomach, "of which one was a complete *ulcus simplex*." In 1874 I presented to the Society a specimen of gastric ulcer associated with cirrhosis of the liver, and called attention to the significance of the association, in these words: "I am not aware

that any frequent connection has been noticed between these two diseases, but, if so, it would seem to add additional weight to Rindfleisch's theory of the pathology of gastric ulcer." But, in order that any discussion to which this paper may give rise may not be diverted into side-issues, I will state that my theory is not dependent upon that of Rindfleisch, although undoubtedly suggested by it. Gastric ulcer is supposed, by that theory, to be developed in a healthy condition of the mucous membrane, while the iliac ulcers are themselves secondary.

The fact that the lesions increase in severity as we approach the valve is so notorious that it would be an absolute waste of time, at this late day, to grope for facts in support of what may be regarded as an axiom in the pathology of typhoid fever. That the locality of perforation in an uncomplicated case (uncomplicated pathologically) follows the same law, is a logical deduction from this generalization. When the ulcer is deepest, perforation is most imminent.

In the discussion to which my paper gave rise, exceptional cases were referred to in which the lesions were most severe at a considerable distance above the valve; also cases in which perforation occurred comparatively high up. It was also stated that perforation had been known to occur during a constipated state of the bowels, and, again, that diarrhoea at a late stage of the disease was very uncommon. I propose to consider each of these objections, and will waive every advantage in my favor that I might justly claim, from the fact that the cases were so exceptional as to impress themselves upon the memory of those whose fortune it was to encounter them.

First, as to the occurrence of extensive ulceration and perforation comparatively high up. The mere record of such facts alone has no bearing whatever upon the theory which I would defend. The stage of the disease is to be considered; the condition of the follicles below the perforation, and the occurrence, or otherwise, of diarrhoea immediately preceding death. Even this is not enough. The condition of the veins leading from these patches is to be examined, in order to determine the presence or absence of thrombosis. The local influence which a thrombotic occlusion of a twig of the mesenteric vein may have upon the pathological process is readily conceived, and has, I believe, never been adverted to. The nearer the centre of the circulation, the more wide-spread the effect of such a thrombosis. Where, I ask, would thrombosis be more apt to occur than in the branches of the superior mesenteric vein, during an attack of typhoid fever? In all cases of extensive ulceration and perforation, but especially where these occur higher up than usual, I would recommend a careful examination of the veins which convey the blood from the seat of disease.

In the next place, it was stated that perforation had been known to occur during a constipated state of the bowels. I think I can affirm, from an examination of a few recorded cases, that it occurs much more frequently in connection with diarrhoea, and, besides, I have never advocated the production and maintenance of a state of constipation in typhoid fever, as will be seen further on, when I come to consider the proper use of laxatives in that disease.

Finally, as regards the statement that diarrhoea is very uncommon in a late stage of typhoid fever, I would reply that if this be so it has been controlled by treatment. That diarrhoea may occur at a late stage, of such severity as alone to be the cause of death, is shown by an instructive case reported to the Society by Dr. Pepper (Trans. Path. Soc., vol. v.). In this case death occurred on the twenty-third day. The patient "had received no medical treatment until the twentieth day of the disease." There was "incessant colliquative diarrhoea. . . . The disease of the patches of Peyer towards the lower end of the ileum was extraordinarily intense. The intestine presented for more than a foot a mass of large, oval ulcers almost confluent, with thick rounded edges, and irregular fungous surfaces." A better case could not be selected to illustrate my views. The severest form of diarrhoea occurs at a late stage of the disease; the patient has received no treatment, and the "disease of the patches of Peyer towards the lower end of the ileum was *extraordinarily intense*."

Specimens illustrating the pathology of typhoid fever are not often presented to the Pathological Society of Philadelphia, unless there is something unusual in the clinical history, probably because the subject is erroneously regarded as being somewhat hackneyed and commonplace; nevertheless, in all but one of the small number of cases recorded in the fourth and fifth volumes of its Transactions, I find confirmatory evidence of the peristaltic theory. The exceptional case was that of a child aged two years and three months, who succumbed to an illness of twenty-four hours' duration, the symptoms of which were entirely cerebral; the intestinal lesions also were so indistinct that a doubt was raised, at the time the specimens were presented, as to the disease being typhoid fever (Trans. Path. Soc., vol. v.).

In vol. iv., a case of perforation seven inches above the valve is reported by Dr. J. C. Wilson.

Of two specimens of intestinal perforation from typhoid fever, which I presented to the Society (Trans. Path. Soc., vol. v.), in one the perforation is recorded as being "a few inches above the valve." In the other, in which the perforations were unusually large and numerous (there were three

distinct perforations, two of which were in one patch), the degree of their vicinity to the valve is not mentioned, but the case is instructive as illustrating the occurrence of perforation in connection with profuse diarrhoea. For several weeks prior to the patient's admission to the Episcopal Hospital, the diarrhoea had amounted to "from fifteen to twenty stools daily."

As these observations are not so much intended to prove an assertion as to explain a theory, I have refrained from referring to other cases than those recorded in the recent volumes of the Pathological Society of Philadelphia. I have selected these because they were at hand, and because they and the specimens illustrating them are familiar to many who will read this paper.

Diarrhoea and peristalsis have, so far, been used as interchangeable terms; but a word of caution is here necessary. The mesenteric glands may possibly be enlarged to such a degree as to compress the vaso-motor fibres of the sympathetic nerve which are conducted to the intestinal vessels by the mesentery, and by this vaso-motor paralysis give rise to a serous diarrhoea, independent of peristaltic contraction. The physiological experiments of Moreau illustrate the effect of paralysis of this portion of the sympathetic.

In the report of a case of peritoneal tuberculosis (Trans. Path. Soc., vol. v.), I referred to pressure of enlarged mesenteric glands as a possible cause of diarrhoea. In the case referred to, the peritoneal coat of the intestines was "covered with tubercles from the duodenum to a short distance below the ileo-cæcal valve." A flattened tumor, several inches in circumference (about six), was found in the mesentery at or near its junction with the vertebræ." This tumor was composed of a mass of enlarged mesenteric glands. "The mucous membrane of the intestine was perfectly healthy." "There was profuse diarrhoea, averaging from twelve to fifteen watery stools in the twenty-four hours." My report of the case concludes as follows: "I would like to ask the opinion of the Society as to the cause of diarrhoea in this and similar cases. In this case it has occurred to me that the tumor found in the mesentery might have caused pressure sufficient to paralyze some of the sympathetic fibres supplying the small intestine, and thus have given rise to a state of congestion which relieved itself by a transudation of serum." The same cause, pressure of enlarged mesenteric glands, may possibly be regarded as a factor in the obstinate and so-called colliquative diarrhoea of *tabes mesenterica*.

In the discussion of this subject at the last meeting, it seemed to be the opinion that I advocated the production and maintenance of a state of con-

stipation of the bowels in typhoid fever, by the use of opium. My remarks were intended to remove this misconception, but were perhaps not sufficiently emphatic. I believe that the degree of peristalsis which prevails in the large majority of cases of typhoid fever is altogether abnormal, and that small and frequently-repeated doses of opium, *or any other drug that will allay spasm of unstriated muscle*, will merely serve to restore the peristaltic function to a healthy condition, or reduce it to a degree somewhat below the normal. The vermicular contraction of the small intestine is absolutely unperceived in health, showing that a very moderate degree of muscular contraction is sufficient to propel the intestinal contents into the colon. The voluntary muscular system is perhaps largely concerned in this propulsion, as is evidenced by the effect of exercise in regulating the bowels. The function of defecation can have, I think, no injurious effect upon the return circulation from the ileum, but would rather favor it by the pressure exerted from without by the abdominal muscles. It is not, therefore, that function that I would suppress, but when laxatives are needed I would recommend those that excite the least amount of peristalsis.

Castor oil, which is a powerful exciter of peristalsis, evidenced even in health by the griping which it causes, should, I think, be condemned as a purgative in typhoid fever. This purgative is the one almost invariably used in that disease, and largely from an odd association of ideas. Its physical properties as a lubricator have caused it to be regarded as soothing to the inflamed mucous membrane. Doubtless a piece of lint soaked in castor oil and covered with oiled silk or waxed paper would be an excellent dressing for a typhoid ulcer; but it is unnecessary to prove that the drug has no such surgical action when administered medicinally.

The mode of action of purgatives has long been a disputed point, one set of investigators maintaining that they act by increasing peristalsis, the other that they increase the natural watery secretions of the intestinal mucous membrane. The truth seems to lie between these extremes: some drugs act chiefly by increasing peristalsis, while others seem to act principally by causing a watery secretion from the mucous membrane. Of the latter class are salines, and especially the sulphate of magnesium. The fact that sulphate of magnesium does not increase peristalsis is vouched for by such experimenters as Vulpian and Legros, while the latter declares this to be true of the whole class of saline purgatives. When, therefore, it is necessary to employ purgatives in typhoid fever, I would recommend salines in decided preference to castor oil, while enemata, as mere exciters of the function of defecation, are, I think, unobjectionable.

In conclusion, I would call particular attention to the fact that the theory which I advance is of a twofold nature. First, it takes into consideration the natural tendency to a mechanical hyperæmia in the ileum, gradually increasing from above downwards, and comprises every cause which increases this tendency, be it tumor, thrombosis, cardiac disease, disease of the liver, or what not. Secondly, it more particularly maintains the effect of peristalsis in a diseased condition of the ileum, as greatly influencing the pathological process.

The bearing upon treatment is entirely a secondary question, to which I have only alluded in passing, this Society not being the place for a full discussion of a question in therapeutics.

I had finished my paper at this point, but was compelled to add a few lines in answer to an objection made this very afternoon. It was that the intestinal muscular coat gradually diminishes in thickness as we approach the ileo-cæcal valve. This is undoubtedly true; but, so far from its being an objection, I regard it as a very decided confirmation of the truth of my views. It would seem as if nature had intended by this arrangement to counteract, *in some degree*, the tendency to mechanical hyperæmia in the lower portion of the intestine. Were it not for this arrangement, the normal peristaltic waves might produce a chronic catarrh in the neighborhood of the valve, while, in spite of it, the increased peristalsis of disease, in connection with the greater blood-stasis in the lower portions of the superior mesenteric vein, is sufficient to determine the well-known gradation of the intestinal lesions of typhoid fever.

April 27th, 1876.

16. *Fatty infiltration of liver, and large white kidneys.*

By DR. LOUIS STARR.

Charlotte —, æt. 25, was admitted to the "Grasby Ward" of the Episcopal Hospital, on March 20th, 1876. She had always been delicate, and subject to attacks of bronchial catarrh on slight exposure, but had never had any symptoms of serious pulmonary disease until December, 1875, when she began to suffer from cough and shortness of breath, and to lose flesh and strength. These symptoms steadily increased up to the time of and after her admission to the hospital. When the patient came under my care, in the latter part of April, she had almost complete anorexia,

severe hectic fever, profuse colliquative sweating, and diarrhoea, and was greatly emaciated. There was pain in the right side of her chest, dyspnoea, and obstinate cough, attended with free muco-purulent expectoration. Her pulse was frequent and feeble, and there was too much prostration to admit of a careful exploration of her chest. On superficial examination, however, restriction of the respiratory movements and diminished elasticity and dulness on percussion were observed over the whole of the right side of the thorax, while on auscultation, bronchial breathing and coarse mucous râles were detected, especially over the posterior surface of the lung. On the left side percussion was also dull, though to a less degree than on the right, and auscultation revealed numerous moist, crackling râles. Death occurred on May 1st.

At the *autopsy*, which was made twelve hours after death, by Dr. Roland, the resident physician, the whole surface of the right lung was found to be firmly adherent to the chest-wall. The upper and middle lobes were completely consolidated by a caseous infiltration. In the upper posterior part of the lower lobe there was a cavity about one inch and a half in diameter, bounded by moderately smooth walls, and the rest of the lobe, with the exception of a small strip along its base, was infiltrated by a material similar to that which occupied the superior portions of the organ. The upper lobe of the left lung was also infiltrated with cheesy matter, and throughout the lower lobe there were numerous isolated masses of the same character, surrounded by congested pulmonary tissue. The infiltration had commenced to soften, so that on cutting into the lung, small cavities, having irregular walls and filled with pus, were observed, and on making pressure with the fingers, pus flowed freely from the bronchial tubes. The lungs together weighed four pounds. The heart was small and fatty; a large soft clot filled the cavity of the right ventricle; none of the valves were diseased. The liver weighed seven and a half pounds, was much increased in size, and was in a state of advanced fatty infiltration. The left kidney was about one-third larger than normal, and presented the gross appearances of that form of alteration known as "large white kidney." The right kidney was likewise increased in size, and showed, in a less marked manner, the same changes as the left.

May 11th, 1876.

17. *Gastro-intestinal catarrh ; peritonitis.*

By DR. LOUIS STARR.

Mary —, æt. 24 years, single, came under my care at the Episcopal Hospital on April 27th, 1876. She had, as far as could be ascertained, a healthy family history, and during childhood had never had any severe illness. The menstrual flow, which began at the age of 17, had been somewhat irregular in its recurrence, but with this exception she had enjoyed fair health, and had worked steadily at her trade, that of weaving, until the spring of 1873. At this time, without apparent cause, she began to lose flesh, grew very weak, and began to suffer from pain in the lumbar and epigastric regions, and occasional attacks of vomiting. These symptoms increasing, she applied for treatment at the hospital on June 6th, 1873. Shortly after admission she became slightly jaundiced; this, together with the vomiting, soon disappeared, but in other respects improvement took place very slowly, the pain in the back being especially obstinate, and she was not in a fit condition to be discharged before June 4th, 1874. She resumed work immediately on leaving the hospital, and remained moderately well up to February, 1876, when the former symptoms returned.

At the date of readmission, April 27th, the patient was extremely emaciated, and in a state of great prostration; her skin was harsh and sallow, though not jaundiced; her appetite was almost entirely lost; the tongue was smooth, dry, and red; there was obstinate vomiting and diarrhœa, the matter voided consisting chiefly of mucus; the belly was scaphoid, and there was severe pain in the epigastric and umbilical regions, extending towards the back. The pain was described as twisting in character, and was augmented by pressure or by taking food, and relieved by the vomiting, which almost invariably followed the latter operation. The heart and lungs were healthy, and a normal quantity of urine was excreted.

During the next ten days more food was retained, and the discharges from the bowels ceased to a great extent; the abdominal pain and tenderness, however, remained unabated, the belly was moderately distended at times, and the weakness steadily increased. On May 11th, a number of isolated purpuric spots were noticed on the tongue, and several large patches on the abdomen. The urine was carefully tested, and found to contain a very small amount of albumen. On May 13th, the vomiting and diarrhœa returned, and continued until May 16th, when death occurred.

The *autopsy* was made fourteen hours after death. On opening the abdomen, the parietal layer of the peritoneum was observed to be thickened,

and extending between it and the omentum there were numerous delicate bands of fibrous tissue. The stomach and intestines were also bound together and to the surrounding parts by recently-formed adhesions, which were readily broken down by the finger. The mucous coat of the stomach was increased in thickness and was covered with tough mucus; the mammillations at the pyloric extremity were more marked than normal, and in several places there were spots of vascular injection; the largest of these, about two inches in diameter, was situated at the fundus. The mucous membrane of the upper portion of the small intestine, and of nearly the whole of the large intestine, was greatly congested. The mesentery was thickened, and the mesenteric glands enlarged. The liver was firmly adherent over the whole of its upper surface to the diaphragm, its investing membrane was much thickened, and on the under surface, to the right of the longitudinal fissure, the collapsed and discolored walls of what resembled a small abscess were discovered. The hepatic substance had apparently undergone fatty change. The spleen was of normal size, though somewhat denser than usual, and was attached to the left lobe of the liver. The right kidney was adherent to the postero-lateral surface of the right lobe of the liver; the left kidney occupied its proper position; the pancreas was unaltered. There was no fluid in the abdominal cavity.

Both lungs were bound to the floor and sides of the thorax by pleuritic adhesions, but the pulmonary tissue was perfectly healthy. The heart was flabby, and weighed, before the clots were removed, five and a quarter ounces; all the valves were free from lesion.

Dr. Pepper said the case struck him as a very interesting one. In the first place, the cause of the chronic peritonitis seemed obscure, as there was an absence of syphilis, tubercle, or cancer. Again, it was interesting to note the resemblance which the general symptoms bore to those of various cases of essential anæmia, even including the appearance of purpuric patches. It seemed to him that the portion of the wall of the small cavity under the liver was a part of the right supra-renal capsule; but, although it might be somewhat altered, it did not present any of the characteristic lesions of Addison's disease. It was to be regretted that a careful examination of the marrow of the bones had not been made. Undoubtedly, in such cases as these, where there are distinct and extensive primary lesions, the study of the mode of production of this high grade of anæmia is a very difficult one; but it has an important bearing on the explanation of cases of so-called essential anæmia.

Dr. C. B. Nancrede thought the condition of the stomach interesting in connection with gastro-intestinal catarrh. He would like to know whether

this hyperplasia of the glands might not be due to the continued vomiting, which causes hyperæmia of the organ. It has been stated that this enlarged state of the glands is due to constantly recurring physiological stimuli acting in excess, as in the case of improper food. The only effect of this is, of course, to produce more or less constant congestion of the stomach. Why, then, may not the constantly recurring and more or less permanent congestion produced by incessant vomiting cause hyperplasia of the glands, as well as a similar congestion due to any other agent, say the stimulus of improper food?

Dr. F. P. Henry said that gastric ulcer was most plausibly explained by interference with the circulation due to contraction of the muscular coats of the stomach during violent vomiting, and thought it reasonable to conclude that a less violent and frequently recurring muscular spasm might so interfere with the circulation as to produce a permanent glandular ectasy.

Dr. C. B. Nancrede asked Dr. Pepper whether enlargement of these follicular glands was an attendant of Addison's disease, as Dr. Pepper in his remarks had seemed to imply that in this case there were some marked resemblances to that affection.

Dr. Pepper replied that it was one of the most frequent lesions in Addison's disease, and was also met with in cases of leukhæmia and pernicious anæmia. While this hyperplasia is a frequent lesion, the degree of functional derangement of the stomach and bowels varies greatly in different cases, and at different periods in the same case.

Dr. Nancrede said that he did not refer to the solitary glands, but to the mucous and so-called peptic glands. To him the peculiar condition of this stomach appeared due to the enlargement of these follicular glands, as indeed has been demonstrated in other cases of gastric catarrh.

Dr. Henry said his remarks referred also to the follicular glands, or gastric tubules. The question has been raised by histologists as to the existence of solitary glands in the stomach. As there had been no microscopic examination of the blood in this case, it could not be determined whether the case was one of organic or simply one of functional anæmia dependent upon malnutrition due to frequent vomiting.

Dr. James Tyson said, with regard to solitary or "closed" glands in the stomach, they have an undoubted existence, although they are very sparse. He himself had a preparation in his cabinet which shows one very plainly, lying among the lower ends of the tubular glands. *May 25th, 1876.*

The specimen was referred to the *Committee on Morbid Growths*, which reported, June 22d, 1876.

Report of the Committee on Morbid Growths:

"Your committee, to whom was referred the specimen of liver, kidney, and supra-renal capsule presented by Dr. Louis Starr, respectfully report that sections through parenchyma of the kidneys exhibit the normal cells and stroma, with but little alteration except such as is apt to affect the innermost cortical layers at an early stage of the process of decomposition. No evidence of the formation of an abscess could be detected.

"Thin sections from the liver indicate that this organ was in an advanced condition of fatty degeneration, but the kidney exhibited no perceptible alterations from its normal structure which were not fairly attributable to the action of the preservative menstruum in which it has been immersed."

18. *Scirrhus cancer of the rectum, with ulceration into the bladder and colloid degeneration.*

By DR. JAMES TYSON.

C. W., æt. 25, a house-painter by trade, consulted me early in June, 1875, for growing weakness and constipation. Thinking that probably he was suffering from lead-absorption, I ordered him iodide of potassium and a tonic and aperient pill of extract of nux vomica, rhubarb, aloes, and belladonna. He returned about June 20th, reporting that he felt stronger, but that his bowels continued very troublesome. A pill at bedtime seemed to produce one or even two movements of the bowels before breakfast, without, however, giving relief to a sense of fulness just within the anus, which was very annoying. Sometimes, again, he would have two, three, or even four stools after dinner, which were, however, small and unsatisfactory, giving no relief to the sensation described. Without examining the rectum at this time, I concluded he had hemorrhoids, as he himself suggested, and ordered an ointment of galls and stramonium, the iodide of potassium continued, but substituted compound liquorice powder for the pill.

On July 2d he reported that he was much better in all respects, although less so as to his supposed hemorrhoids; but as his bowels were so much better these also annoyed him less. There had, however, been some little bleeding from the piles.

On July 9th, he reported some looseness of the bowels, with more or less constant disposition to stool. In consequence of this the dose of the liquorice powder was diminished. The iodide was also omitted, and a mixture of dilute nitro-muriatic acid, pepsin, and strychnia ordered.

On July 16th he was again much better in all respects. The improvement, however, did not continue, and there was added a sort of incontinence of the bowel, as the result of which there would be small involuntary movements, and attempts to pass flatus would be followed by small fecal discharges. I now examined his rectum with the finger, and found just within the anus a thickening which extended almost entirely around the gut, but appeared smooth and covered with mucous membrane. Apparently, it did not extend upward farther than two inches. The withdrawal of the finger was followed by a thin fecal discharge. I now sent him, on account of the surgical nature of his disease, to my friend Dr. C. T. Hunter, who unhesitatingly declared the condition to be one of carcinoma. He was informed of the suspected nature of the growth, placed upon tonic and supporting treatment, and for six months his condition did not materially change. He perhaps grew weaker, but *very* slowly, and he continued to visit me at my office at intervals, and even occasionally did a day's work.

January 17th he was again placed upon the iodide of potassium, gr. x, 3 t. d., with the intention of continuing it as long as possible and thus determine whether it would have any effect on the growth. On the 3d of March he told me he thought he *passed wind through his urethra*. No fecal matter, however, was passed in this way, although he was constipated. The latter condition now annoyed him a good deal, but he was easily relieved by small doses of sulphate of magnesium before breakfast. It soon became certain that a communication between the bladder and rectum existed. He continued slowly to grow weaker until May 29th, when he sent for me, being too weak to leave the house. I found him suffering with extreme abdominal pain, which was not, however, constant; his bowels had not been open for a week, and he had attacks of profuse vomiting of liquid matter, but without fecal odor. Purgatives and injections failed to afford relief, and, singular to say, the latter were retained, not a drop of two large ones passing the anus; and yet, as far as the finger could reach, there appeared to be no obstruction of the bowel. The belly was enormously swollen and tympanitic. He was finally put upon one-half grain doses of calomel with one-quarter grain of opium every hour. These were ordered on the 2d of June, and after about fifteen grains of calomel had been taken he began to have copious evacuations of fecal matter through his urethra. These kept up for a couple of days, the quantity discharged being very large, and, although inconvenient, the passage was accomplished with tolerable ease. It became necessary, finally, to check the discharges by opiates. During this time there was no discharge whatever by the anus,

and the belly continued swollen and painful. He gradually sank, and died quietly June 10th.

The *post-mortem* examination was made on the 12th. The body had suffered considerable emaciation. On opening the abdomen the omentum was found much congested, the larger vessels being cord-like in their distention with blood; the wall of the bowel was also congested, but there was no peritonitis except in the pelvis, whose contents were glued together. The rectum and bladder were removed in relation. The lower end of the former was the seat of extensive thickening and colloid degeneration; as the bowel was ascended, the proportion of the latter grew less, and finally became circumscribed in cysts of gradually diminishing size until they reached that of two to four lines in diameter, so that they could easily be cut in thin sections and their formation minutely studied. The cancerous infiltration, which invaded especially the submucous connective tissue, was thickest just within the external sphincter, where also the colloid degeneration was most complete,—masses three inches in diameter separating from the gut on its removal,—gradually diminished in thickness, until it disappeared at least eight inches above the sphincter muscle. The perforation in the rectum, less than half an inch in diameter, was found about three inches above the external sphincter, and passed into the bladder a very little to the left of the median line, on a line drawn between the two orifices of the ureters. The opening was about the same size as that in the rectum. The bladder appeared small and contracted, and was partially filled with semi-liquid fecal matter.

Histologically the growth exhibited the elements of the hard or scirrhous variety of glandular cancer, the fibrillar connective tissue being largely predominant, although well-defined alveoli with epithelioid arrangement of contained cells were sufficiently numerous in thin sections.

As already stated, the smaller cysts filled with colloid matter afforded an excellent opportunity for the minute study of this degeneration. In these cysts were found cells in different stages of metamorphosis, including perfect colloid spheres and those of the characteristic "seal ring."

The specimen is preserved in the museum of the Hospital of the University of Pennsylvania.

June 22d, 1876.

III.—THE VASCULAR SYSTEM.

1. *Rupture of heart at three points, and other lesions, caused by a railroad accident.*

By DR. JOHN H. PACKARD.

Mr. P., æt. 33, was walking along the track of the Philadelphia and Baltimore Railroad, near a station, when he stepped out of the way of a freight train, and was struck by an express train going at full speed in the opposite direction. He was carried along in front of the locomotive, the engineer told me, some forty feet; he then fell over on the other track, striking head first, and was dead when the bystanders reached him.

Mr. P. had consulted me several times during the last few years. He had long been an epileptic, although within about eighteen months the attacks had been very much less frequent and less severe. It may be mentioned that he was the father of the micro-cephalic idiot, also epileptic, whose case I had the honor to report to this Society in May, 1874. He had suffered also very constantly from vomiting after his meals, and had lately complained much of pain in his back; his friends had also noticed him to be less capable of exertion than formerly.

An *autopsy* was made thirty-nine hours after death, by Drs. Sinkler and Williamson.

Body quite muscular, but with a thick layer of subcutaneous fat, in abdominal walls especially.

HEAD.—A very extensive scalp-wound on the right side, raising a very large flap, a great deal of fine dirt being embedded in the tissues. Compound comminuted fracture of the right parietal bone, with many loose pieces. This fracture was found to extend down through the temporal bone, passing in front of the petrous portion on each side and separating the basilar process of the occiput from the body of the sphenoid. It involved the squamous portion of the left temporal, the left parietal, and the upper part of the frontal, actually dividing the skull proper into two portions, an anterior and a posterior, which were freely movable upon each other. Besides this main fracture, the petrous portion of the right tem-

poral bone was broken across near its middle, the inner portion lying quite loose.

Brain.—The upper surface of the right hemisphere was extensively lacerated by the fragments of the skull, as were also the vessels at the base by the ragged edges of the broken bones. The right optic nerve was torn completely across. All the ventricles contained partly coagulated blood, but no serous effusion. The brain-substance was apparently normal throughout.

THORAX.—Lungs.—Left lung lacerated in three places, apparently by sharp fragments of the fifth and sixth ribs, which were broken near their angles. Very strong old adhesions existed at the back of the right lung. Both lungs were emphysematous in their upper lobes, and in patches elsewhere.

Heart strongly contracted and empty. The posterior wall of each auricle was ruptured, the rents being parallel with the auriculo-ventricular septa. Another small rupture involved the posterior portion of the inter-auricular septum, the fenestra ovalis seeming to have been slightly patulous.

A small quantity of blood was noted in the pericardial sac. An immense amount of blood had escaped from the body at the time of the accident, on the way to the city, and after it was placed in the ice-box. This was probably from the wound in the head.

ABDOMEN.—Some blood was in the peritoneal cavity, and an extravasation of about f3ss in the substance of the lesser omentum. The source of the former of these hemorrhages seemed to have been a laceration of the posterior surface of the spleen, which organ was otherwise normal.

Liver enlarged and fatty, and seemingly in a state of incipient cirrhosis.

Stomach nearly full of half-digested food. Ecchymosis of some extent existed at two points along the lesser curvature, and at one point near the cardiac extremity there was a straight slit about three-quarters of an inch long, involving the mucous coat only, and looking as if produced by excessive stretching. This slit seemed to have been of long standing.

The other abdominal organs seemed healthy.

The right ankle was dislocated, the astragalus having been forced backwards, carrying the foot with it, and the fibula fractured about three inches above the joint. There was some ecchymosis about the right groin, but no fracture or luxation discoverable.

The right shoulder was severely bruised, but without discoverable fracture.

The examination now reported was undertaken in accordance with the dead man's often-expressed wish, in order, if possible, to discover the cause

of the symptoms from which he had so long suffered. In this purpose we did not succeed. There was nothing to account for the epileptic seizures, and it scarcely seems as if the little slit mentioned as existing in the mucous lining of the stomach could have given rise to such troublesome and constant rejection of food,—for several years. Probably the want of nutrition, shown by the state of the liver and the emphysematous condition of the lungs, may explain his failing power.

From the dirt ground into the tissues about the scalp-wound, and the fearful violence inflicted on the skull, he must have fallen on his head, striking the right parietal region.

As there was no external bruising corresponding to the fracture of the ribs, I think this lesion may have been due to the forcible bending side-wise of the thorax, the head and shoulders being arrested while the hips and lower extremities were still in full descent.

The rupture of the heart seemed to me to be due in part to the mere jerking force, acting on the whole column of blood, and partly to sudden and strong contraction of the organ at the moment when he saw his danger, or perhaps when he felt the blow. That the former was the main cause would appear from the seat of the lesions, and from the fact that the muscular tissue of the heart showed no evidence whatever of fatty change. It was as if a bladder filled with water, and thrown with sufficient force, should give way at its weakest point.

Other cases may be upon record of rupture of the heart at more than one point, but I have not been able to find any such; nor am I aware that this lesion has ever been observed as the result of external violence.

September 9th, 1875.

2. *Aneurism of the thoracic aorta.*

By DR. LOUIS STARR.

Henry W., æt. 33, a stone-cutter by occupation, was admitted to the medical ward of the Episcopal Hospital on September 3d, 1875. He had always been perfectly temperate in his habits, and, although he had worked steadily at his trade, had never overtaxed his strength or subjected himself to any sudden strain. In early life he contracted a venereal sore, which, according to his statement, had not been followed by any decided manifestation of constitutional syphilis. With the exception of occasional attacks of intermittent fever, he enjoyed fair health until the commencement of his last illness, about the 20th of August, 1875. At this date

he again began to suffer from malarial poisoning, but was not obliged to give up work until September 1st, when he had a chill, followed by fever and sweating. On admission he complained of general debility, headache, soreness in the muscles of the back and legs, and pain in the right side of the chest; the latter was neuralgic in character, and was usually seated about one inch below the middle of the clavicle, but often extended from this point through the chest, towards the angle of the right scapula. His tongue was heavily coated, his bowels constipated, and there was some nausea, with urgent thirst and almost complete anorexia. His pulse was eighty per minute, regular, moderately strong, and equal in both radial arteries. Physical exploration revealed no pulmonary or cardiac disease, and, on examination, the urine was found to be normal.

Several hours after coming into the hospital he had a well-marked malarial paroxysm. Under appropriate treatment his general condition improved steadily, and he had no more chills; at the same time there was little diminution of the pain below the right clavicle or of the sensation of dryness of the fauces and thirst. There was also upon several occasions quite profuse sweating, confined entirely to the head and shoulders. At one P.M. on September 16th, after a hearty dinner, which had been eaten sitting up in bed, he stretched himself back as if about to go to sleep, and in this position was found dead four or five minutes afterwards. The patient had been unusually well during the morning of the 16th, and there was no apparent cause for his sudden and very unexpected death.

The *post-mortem* examination was made four hours after death. The body was well nourished. On opening the thorax the heart was found in the normal position, but appeared to be very much enlarged; when an incision was made into the pericardium, however, this seeming increase in size was ascertained to be due to the distention of the pericardial sac by a large, recently-formed blood-clot, which with the bloody serum surrounding it weighed sixteen ounces. The pericardium was loaded with fat, and was much thickened near its attachment to the great vessels. The heart weighed thirteen ounces; both ventricles were firmly contracted, and the left was somewhat hypertrophied, its walls being one inch and an eighth in thickness. All the chambers of the heart were empty. The leaflets of the mitral, tricuspid, and pulmonary valves were healthy, and those of the aortic valve, though thickened along their edges, were competent. The aorta was atheromatous and considerably dilated, and was filled up to the point of origin of the innominate artery with a currant-jelly-like clot. On the anterior surface of the vessel, about half an inch above the semilunar valve, there was a small dissecting aneurism communicating with the artery

by an opening one-eighth of an inch in diameter; to the left of this and one inch above the valve there were three other openings; the largest of these, a quarter of an inch in diameter, communicated with a small false aneurism scarcely the size of a filbert, while the two smaller ones opened into another false aneurism nearly as large as a walnut. The upper two-thirds of the wall of the latter were formed by the pericardium, but the lower portion was composed merely of a thin layer of connective tissue, and in this situation there was a rent, half an inch long, through which the blood found in the pericardial cavity had escaped. The centre of the clot filling this aneurism had undergone softening, leaving a free passage between the aorta and the pericardial sac. Both of the smaller aneurisms were filled with firm laminated clots. On the right side of the aorta, an inch above the valve, there was a fissure an inch and a half in length, running transversely, and extending completely through the arterial coats; the edges of this were separated by a prolongation of the clot which occupied the interior of the vessel. The lungs were healthy. The brain and abdominal viscera were not inspected. Although there was no evidence of constitutional disease, yet there can be little doubt of the syphilitic origin of this condition.

September 23d, 1875.

3. *Obscure pericarditis and double pleurisy in a child.*

By DR. JOHN H. PACKARD.

Isabella W., æt. 2 years, a very healthy and well-nourished child, was taken sick on the 9th of October, 1875, with what seemed to be abdominal pain. Her mother used some simple household remedies, which gave no relief, and I saw her on the 11th. She was then suffering, to all appearance, from indigestion. A careful examination of the chest disclosed nothing abnormal; her pulse was rapid, but not more so than was in accordance with her febrile condition.

Next day her condition was unchanged, except that there was a rather copious eruption of very minute brown spots on the abdomen, and a few on the neck. In the afternoon she vomited freely, twice, a purplish-brown grumous matter, like altered blood. There was some rigidity of the muscles, especially at the back of the neck, retracting the head; and she complained when moved in any way.

On the 13th she was evidently worse; her respirations were seventy-five in the minute, and, although the temperature of the skin was good,

the feet and legs were mottled purple. Her pulse was uncountable; and at eleven A.M. she died. Her intellect was clear throughout.

An *autopsy* was made by Drs. Sinkler and Gerhard, twenty-nine hours after death.

Body very plump and well nourished; no rigor mortis.

Thorax.—Pericardium distended with serum, and both surfaces thickly coated with yellow lymph, easily stripped off. Slight effusion in each pleura, with long strings of croupous lymph. A large patch of lymph attached the apex of the left lung to the opposed pleural surface posteriorly, and another connected its base to the diaphragm. Both lungs were deeply congested, the left more so than the right.

Abdomen.—Liver decidedly enlarged, and showing curious irregular spots of very light-yellow color on its surface, involving the substance beneath. Gall-bladder full of liquid bile. Intestines distended with gas, and here and there much congested in patches. Solitary glands very fully developed. Mesenteric glands enlarged. Spleen rather large, but seemingly healthy. Kidneys normal.

October 14th, 1875.

4. *Mitral stenosis.*

By DR. WM. PEPPER.

V. E. F. suffered with rheumatism in childhood, and again while in the army in 1862, after coming to this country. First came under observation in 1874, with typical symptoms of mitral stenosis; strong auriculo-systolic murmur at apex, distinct thrill, auricular impulse, increased area of cardiac dullness, frequent attacks of pulmonary congestion, with occasional hæmoptysis or epistaxis. Later, he suffered from violent paroxysms of cardiac disturbance, with œdema, orthopnoea, etc. These were usually controlled in a most remarkable manner by large doses of digitalis. In some instances, copious epistaxis seemed to be followed by very rapid relief to symptoms. Finally, symptoms of cardiac failure became more persistent, and he died in the latter part of October.

Autopsy.—Hemorrhagic infarctions in lungs; a few small emboli in kidneys and spleen; liver congested.

Heart enlarged, weight 18 oz. Left auricle had a capacity of f3viii, with much thickening of walls. Right auricle not so much dilated, but marked thickening of muscular wall. Left ventricle was the seat of marked hypertrophy, with some dilatation. The mitral valve was contracted so as

barely to admit first joint of little finger, and projected as a dense, rigid, funnel-like body into the cavity of the ventricle. Aortic valves competent. Right ventricle showed extreme hypertrophy of columnæ carneæ, and general thickening of the muscular walls. Tricuspid valve apparently competent, the leaflets being enlarged but otherwise healthy.

October 28th, 1875.

5. *Pericarditis, with fenestration of semilunar valves.*

By DR. F. P. HENRY.

The specimen was removed from a patient (male, æt. 35), who died a few hours after I saw him, at the Episcopal Hospital. He was moribund at the time of his admission, and was suffering from double acute pleurisy, double pneumonia of the lower lobes, and pericarditis, the latter evidently an extension from the inflamed pleura, as the lymph upon the pericardium was much less firmly organized than that upon the pleura. A great portion of it was rubbed off during the handling necessary to the removal of the specimen, but enough remains to show the character of the exudation, its thickness, cohesion, etc.

The heart-walls, on section, were of a dark purple color, with the exception of a much paler layer, about a line in thickness, immediately below the pericardium, which appeared to the naked eye to be the seat of an acute fatty degeneration, such as frequently attends the pericarditic inflammation. I do not affirm that there existed such a degeneration, but merely refer to the contrasts of color presented to the unaided eye.

The specimen, however, at least to my mind, does not derive its chief interest from the pericarditis, which presents nothing more than the appearances attendant upon an acute inflammation of a serous membrane, but from a condition of the semilunar valves of the aorta which may be considered as occupying a border-line between physiology and pathology. I refer to *fenestration*. This condition is treated of in pathological textbooks, but only to warn against its being considered other than physiological. It is an approximation towards the type of the auriculo-ventricular valves, and consists in a separation of the free border of the valve from the line of closure. Rindfleisch's admirable description of the condition and its causation renders superfluous any further attempt in that direction.

The valves in this case are believed to have been competent. They were subjected to the water test, but not until after the left ventricle had

been opened by a linear incision. To bring the borders of the incision together during the application of the test, it was necessary to make use of some slight pressure, which may have impaired its value.

In this connection it seems apropos to state my belief that none of these tests are conclusive. Frequently, perhaps generally, after death, the heart is contracted; so much so as to render it an extremely difficult matter to distinguish between slight degrees of hypertrophy and muscular contraction. This contraction may undoubtedly assist in the competent closure of the valves.

The researches of Mr. Savory into the anatomy of the semilunar valves, by means of longitudinal sections through the aorta and pulmonary artery and the ventricles, have shown that these valves, instead of being only supported by their line of attachment to the artery, as was formerly taken for granted, also largely derive support on their inferior surface from the muscular wall of the ventricle. Let this wall be thickened by the contraction of the longitudinal and oblique fibres which arise from the borders of the cardiac orifices, and at the same time rendered rigid by the coagulation of the myosin, and it is apparent that the conditions are widely different from those which exist during the closure of the semilunar valves,—that is, during the ventricular diastole.

Until we can imitate the cardiac diastole, this test will remain one of no great delicacy. It should not be relied upon. That we will ever be able to produce an artificial diastole does not seem likely, since it depends upon the elasticity of the muscle, which property is greatly impaired immediately after death, and soon thereafter entirely lost.

Dr. Harrison Allen said that Dr. Pettigrew, in his work on the circulation, calls especial attention to the papillæ and to the spiral fibres running down to the apex of the ventricle and up again, forming a figure "8" or double spiral curve, and places great stress on the influence of the contraction of these fibres on the auriculo-ventricular valve; but he recalled nothing in these papers which would tend to explain this condition of the aortic valves described by Dr. Henry. He thought also that the ordinary mode of applying the hydrostatic test—cutting of the apex of the heart and pouring water into it—was no criterion of the valves' sufficiency, the muscular action of the heart being essential to the fulfilment of all conditions.

Dr. Pepper said he remembered to have seen it stated that the aortic valves of the shark presented a high degree of fenestration. As to its significance in the human subject, he thought there was room for considerable discussion. The case present is a marked one. He desired to ask

Dr. Henry whether there was any evidence of renal disease. He thought the condition of the muscular walls of the heart, in the absence of valvular disease, pointed to renal disease.

Dr. Henry said that the urine was found loaded with albumen, but that there was no opportunity to make a microscopic examination.

Dr. Pepper said he thought he had certainly met with these fenestrations more frequently under such circumstances. He thought the condition might be explained on the supposition of a high degree of tension or traction on the valves, under which the size of the valves is gradually increased; and as, in consequence, the fibrous basis-substance of the leaflet becomes deficient towards the free border, the perforation is formed slowly, —an atrophy, as it were, as the result of increased tension. It is not impossible, however, judging from the frequency with which they are mentioned, that the lesser degrees might result from physiological peculiarities of structure.

As to the effect of such lesions on the circulation, it will usually be found that such slits are in the long axis of the valve, running parallel to the free border of the leaflets, so that when the valve is put on the stretch the edges of the fenestra approximate, and hence we would not expect regurgitation even in such extreme degrees of the lesion as here presented.

Dr. C. B. Nancrede thought the idea of "strain" hardly applicable to Dr. Henry's case. He said that when the valves were closed, the surfaces of the edges of the cusps were in contact for a line or more, and it seemed hardly possible to suppose a strain to be exerted upon these mutually supporting surfaces, unless they were separated, which could only obtain when the fibrous ring to which their bases were attached was likewise dilated. If this were so, we should have insufficiency (which was not found in the present case), as then the corpuscula aurantii would not be sufficient to fill up the space left vacant by the closing of the three semi-circular cusps.

Dr. James C. Wilson asked if the clinical histories of the cases in which such transverse fissures were found after death include murmurs of obstruction at the aortic orifice,—whether these marginal loops would be sufficiently free to cause murmur. In this specimen he thought there seemed sufficient relaxation of the upper thread to allow it to float outward and upward from the valve into the blood-stream, in such a way that a systolic murmur might arise.

Dr. Henry said that, although the heart was not carefully ausculted before death, he thought it evident such a sound could not have been produced, because, if these threads had been thrown into vibration by the

blood-current, so as to produce a sound, they would also have been covered with firmly-adherent fibrin, as is the case with threads passed through a vessel in physiological experiments; whereas the most careful examination after death revealed no such condition.

Dr. James Tyson had, since his attention was first called to this condition, lost no opportunity of looking for it, and had examined a number of cases, and was inclined to think that if the view ordinarily taken of the mode of closure of the aortic valves was correct—that is, that not simply their edges were opposed, but the valves themselves for a short distance from the edge—Dr. Nancrede's objection to the idea of the fenestrations being produced by strain was well founded. He was, therefore, inclined to believe that the fenestrations were physiological rather than pathological.

Dr. Pepper was not aware of any very recent physiological observations which threw any new light on the position assumed by the aortic leaflets when closed and subjected to strong pressure. It had certainly seemed to him that when water is poured into the aorta the leaflets do not assume the position described by Dr. Tyson. But, turning to the results of pathological observation, it was undoubted that in cases of greatly increased arterial tension—as, for instance, in cases of chronic kidney-disease, with consecutive hypertrophy of the heart and enlargement of the orifice of the aorta—the aortic leaflets are frequently found enlarged, with distinct thinning of their free border. There are often no evidences of any inflammatory action about the valves in such cases, and, indeed, it cannot be conceived that any such process—which usually gives rise to contraction and thickening—should produce the changes above described. And considering the relations of the aortic leaflets to the column of blood which they support, and the well-known conditions of hydrostatic pressure, it seemed difficult to conceive of such a position of the valves as would prevent their free borders being exposed in some degree to the increased degree of tension which existed in so many cases. And where such increased tension occurred, it seemed conceivable, and even probable, that it should gradually bring about atrophic perforation near the free border.

It is perfectly true that these fenestrations have been found where there were no clinical evidence of their existence and no associated changes in the heart; but if his memory served him, he had himself more frequently observed them in cases where there had been high arterial tension, and where there were hypertrophy of the left ventricle and enlargement and thinning of the aortic leaflets.

January 13th, 1876.

6. *Mitral and aortic disease ; pleurisy with effusion.*

By DR. W. H. PARISH.

A. B., aged about 50 years, entered St. Mary's Hospital about February 5th, with general œdema, slight peritoneal effusion, evidences of fluid in both pleural cavities, especially the right. Both lungs filled with small bubbling râles. Respiration frequent, imperfect, and labored. Slight cough. Pulse full, frequent, and irregular. Heart's impulse feeble; its action irregular, intermittent; its sounds feeble, the first sound being accompanied with a blowing murmur.

Condition grew worse constantly, and death occurred on February 7th, from failure of heart's action.

Autopsy by resident physician, Dr. A. Parish.—Peritoneal effusion; œdematous condition of lungs; serous effusion slight in left pleura; a pint or more in right pleura.

Heart enlarged; left ventricle dilated; atheroma of mitral and aortic valves.

Dr. Joseph G. Richardson said the case was one of great interest to him. The patient first consulted him about a year ago, when he found a bellows murmur replacing the first sound of the heart, indicating almost complete insufficiency of the mitral valve. He told him there was a little trouble about the heart, and that no one could entirely cure him. The patient then informed Dr. R. that twenty years ago, in Dublin, Drs. Stokes and Sir Dominic Corrigan had made the same diagnosis, and from that time to this he had dyspnoea on taking cold or on moderate exertion. He was, however, dissatisfied with the opinion Dr. R. gave him, and selected a homœopath, under whose care he continued several months. About three weeks since, he again sent for Dr. R., and was found suffering from an attack of pleurisy of the right side, from which he improved, until he got up one night and went down into the yard partly dressed. The result was a severe relapse of the pleurisy, under which he gradually grew worse, and was finally removed to St. Mary's Hospital. He thought it might be said that it was a combination of the cardiac disease, pleurisy, and bronchitis, which caused the fatal termination.

February 11th, 1876.

7. *A hypertrophied heart and a contracted kidney.*

By DR. JOS. G. RICHARDSON. Notes by DR. H. EMLÉN WESTHAEFFER.

R. S. (colored), born in Philadelphia, æt. 22, single, occupation house-work, was admitted into the Presbyterian Hospital, March 18th, 1876, and the following history was obtained. Her habits had been good, but her general health poor, she being subject to frequent attacks of illness, characterized by severe pain in the head and left side, under the breast. She had had a cough for the last three months; she also noticed a swelling of her legs for some time past. She has had a poor appetite and been gradually losing flesh, lies chiefly on her right side, as lying on the left side increases the pain in that part. On March 14th, she was seized with one of her attacks of severe pain in left lateral region with cough, and applied for admission here the 18th of same month. On entrance, she was very much prostrated, pulse 116, feeble, heart laboring violently, impulse felt over large area of chest; breathing rapid and imperfect, voice weak; cough severe, expectoration made up of large quantities of frothy mucus slightly tinged with blood. Dulness over posterior of both lungs. Respiratory murmur lessened, respiration 36. Tongue coated, no appetite, bowels costive, temperature $104\frac{1}{2}^{\circ}$. Patient seemed to be stupefied, but easily aroused. She was put on the following treatment:

Quiniæ sulph., gr. ij, every two hours; milk-punch every four hours; beef-tea "ad libitum;" poultices were applied to the chest. On the 19th she was ordered a pill of digitalis, opium, and ipecac, in order to moderate the heart's action. For the cough, she was given a mild expectorant. On the morning of the 19th her temperature fell to $102\frac{1}{4}^{\circ}$, and she was evidently much easier, but very weak. The symptoms of pulmonary disease gradually yielded to the treatment adopted, and on the 23d had almost disappeared. On this day we succeeded for the first time in obtaining a specimen of her urine, which was found to be highly albuminous. The following evening she exhibited a tendency to stupor, and died comatose on the morning of the 25th.

Autopsy.—Lungs slightly congested. Some adhesion of recent pleurisy over left lung. Heart displaced; great hypertrophy of left ventricle, with extensive destruction of aortic valves. Liver congested and enlarged. The kidneys in a condition of very marked cirrhosis combined with fatty degeneration.

April 13th, 1876.

8. *A new view of the pathology of so-called phlebitis.*

By DR. CHAS. B. NANCREDE.

Let me preface this paper by a few remarks on the anatomy of the veins, which it will be well to bear in mind, as thereby some of my later statements can be more readily comprehended. As is well known, the walls of a vein, when empty, readily collapse, while, on the contrary, those of an artery under like circumstances remain patulous. When we examine the relative distribution of the three constituents forming the vascular walls in each case, this fact is easily explainable. In the arteries we have the middle coat, consisting of a large amount of muscular and elastic tissue, the former more abundant in the small and medium-sized vessels, the latter in the large; while in the veins neither is present to any great extent.

To the amount of these tissues present the patulous state or the reverse condition of a vessel is due.

Another fact of still more importance is that many veins are enclosed in a connective-tissue sheath, common to the accompanying arteries, and that all are closely surrounded by and in direct continuity with the same tissue. Indeed, their adventitia is really a portion of the connective-tissue system.

The microscopic anatomy of the veins presents no special points of interest relating to our present investigation.

I would next call attention to the influence of healthy granulations in preventing the absorption of the products of broken-down tissue, etc., as proved by some experiments of Billroth's on dogs; and, on the other hand, the exceeding readiness with which such substances are taken up from an unhealthy surface or the areolar tissue. Thus, Billroth found that the most putrid fluids when applied to healthy granulations, so long as they contained no cauterizing substance, were not absorbed, whereas the same fluids in a fresh wound, or in the areolar tissue, produced the most profound systemic disturbance.

Now, as to the pathology of so-called phlebitis, I do not believe there is any such thing as an adhesive inflammation of the veins, as shown by an effusion of plastic lymph upon the intima, causing a secondary thrombosis. On the contrary, I consider the thrombosis as the primary affection, and the inflammation as the secondary. As the limits of this paper will not admit my entering into the controversy, I will simply state the facts which

have led me, in common with most modern pathologists, to enunciate the above-mentioned views of this disease.

A priori, it is difficult to conceive of a *non*-vascular tissue, such as the intima, initiating inflammatory changes, especially as most of its nutriment comes from the blood circulating through it. Then, too, were lymph effused, how could it remain in its soft semi-fluid condition attached to the vascular walls long enough to form false membrane or by its roughness induce coagulation of the blood? So great a difficulty did this fact present to the mind of John Hunter, who first systematically wrote on this disease, that he was compelled to suppose "that the coagulable lymph must undergo some change connected with the disposition which produced its extravasation."* Again, Travers showed, by actual specimens, that veins after ligature or division repair without adhesive inflammation.† Experiments on the lower animals prove, as far as they go, the extreme insusceptibility to inflammation of the lining membrane of veins. Both Lee and Callender have clearly shown that Gendrin's experiments were fallacious; for when the opening in the ligature portion of vein was carefully closed, no lymph was found, *although it was abundant when the opening communicated with the surrounding inflamed tissues*.‡ On these and similar grounds, I am therefore compelled to conclude that the older writers mistook effect for cause, and *vice versa*; and I would therefore strike out the term *phlebitis*, and substitute that of *thrombosis*, or *thromballosis*, as Mr. Callender terms it.

I hope to demonstrate that this—the thrombosis—is the important part of what we are accustomed to call inflammation of the veins, and that it is certainly possible in theory, and probably to a certain degree feasible in practice, to obviate its occurrence. Until we understand the true nature of this or any disease, we can but combat its results; but, if my views of phlebitis are correct, we ought at least to attempt prophylaxis.

There is another point to which I must refer before proceeding to explain my views of the pathology of this disease, viz., the now universally accepted theory of the nature of fibrin. Alexander Schmidt, in the year 1872, demonstrated, by experiments with which most are doubtless familiar, that fibrin as such does not exist in the blood, but where a clot forms it is due to the union of two substances always present in the blood, and readily separable from it. One of these he calls fibrino-plastin, the other fibrinogen.

* Hunter's Works, vol. iii. p. 584.

† Travers's Surgical Essays, plate xiii.

‡ Holmes's System of Surgery, vol. iii. p. 359.

They resemble each other closely in chemical composition. The fibrino-plastic substance is present chiefly in the blood-cells, and is probably identical with their globulin. The fibrino-genetic is the result of the retrograde metamorphosis of tissue, and is found in the plasma. I do not mean that the former substance exists solely in the blood-cells, but most abundantly in them, for it can also be obtained from the plasma. By the light of these investigations we can understand facts which were before explainable only by hypothesis, or which were referred to totally wrong causes. Before Schmidt's observations were published, there was no really credible explanation of the great excess of fibrin—the so-called *hyperinosis*—so constant an attendant of rheumatic fever. Now, when we reflect upon the high temperature in that disease, due of course to increased tissue-waste, we can see how an immense excess of the fibrino-genetic material is formed and retained in the blood, owing to the imperfect action of the secreting organs. So too in other inflammations—as for instance those due to traumatism, or in pneumonitis—we have a similar explanation holding good. There is but one other condition that I will refer to where this excess of the products of retrograde metamorphosis is especially marked, and where also we too frequently have thrombosis, or even heart-clot, viz., the puerperal state. When we consider the enormous mass of uterine tissue which is absorbed in the short space of six weeks,—the major part of this absorption taking place during the first ten days,—it must be evident how full the blood will be of fibrin-forming substance. I shall now pass directly to the consideration of the subject of my paper, and seek to apply the above facts to the elucidation of its phenomena.

Among the most important of the predisposing causes of thrombosis is undoubtedly slowing of the circulation. This may be produced principally in three ways: first, by compression of the vessel, causing narrowing and therefore increased friction; secondly, by dilatation, as in aneurism and varices; and thirdly, by the feebleness of the heart's action. The first and second causes obtain in so-called phlebitis, where we have concomitant infiltration of the cellular tissue, and, as a rule, a typhoid condition of the system. The present views of the immediate cause of the thrombosis really amount to nothing, for they but refer it to some unknown condition of the system. I respectfully submit that my views of its causation, if correct, render it perfectly plain. In all cases of this affection the condition of the wound is eminently unhealthy, and it is therefore in the best possible condition for the absorption of the products of retrograde metamorphosis; this is one factor. The other is, that in natural hæmostasis, after any lesion of continuity, we have a clot sealing the opened ends of

the vessels. Now, it is very clear that when the retrograde products reach the plugged vein by the next uninjured collateral, they meet here the fibrino-plastic substance in the hæmostatic plug, and we have a thrombus formed, extending towards the heart. Again, the next collateral above brings in fresh fibrino-genetic matter, which meets the older portion of the thrombus, and it again extends. But where will this stop? Will it not extend even to the heart? Not so, say most writers, because it will cease where the main vein joins the diseased one, the strong current of the former not allowing the clot to extend. But if this were strictly true it would never extend beyond *any* large collateral vessel, nor could fibrinous concretions form on the heart-valves. Both of these events do occur, however: so some other explanation must be sought.

On referring to my views, it will readily be perceived that there is, *a priori*, a very easy explanation of this, viz., The clotting must cease when no more collateral veins pour in blood coming directly from the disease-focus and therefore loaded with fibrino-genetic matter. This, I say, would necessarily follow from *a priori* reasoning. Now let us see what information actual *post-mortem* reports give. I shall presently give two or three such in detail, but here say that they most singularly confirm my views, the clot always ceasing when no more impure blood is poured directly into the affected veins. These records are not chosen to uphold my theory, but are merely the only accessible ones sufficiently fully reported to be of service. They are quoted from Mr. Callender's article before mentioned, in Holmes's "System of Surgery." I do not doubt that all cases, if carefully examined, would show the same condition of affairs, and that should there be any apparent exception it will be found explainable by the fact that the inflammation does not extend as far as it seems, or that the wound, in some places, is sufficiently healthy not to absorb the broken-down detritus. If all these statements are correct, we can understand how in one case we have septicæmia, in another so-called phlebitis; in the former the lymphatics being favorably circumstanced for absorbing septic matter, in the latter the venous radicles. I will now give the *post-mortem* records. "In the body of a man brought to St. Bartholomew's for dissection, death having resulted from phthisis, the nates were covered with sloughing sores. The left femoral, just below Poupart's ligament, was filled with a firm coagulum which ascended to the junction of the epigastric vein. Attention was drawn to numerous veins about the base of the sloughs, which were more than usually conspicuous from being distended with clots. *They converged towards and formed the left internal circumflex, and so extended direct to the femoral;* and, without doubt, accounted for the clot which

had formed there in direct continuity with those in the smaller vessels."* The italics are mine, in this case as well as in the others cited below.

Again, "In February, 1864, a woman aged twenty died after amputation of the thigh, with symptoms of pyæmia; there was no evidence of vein-obstruction about the vessels of the thigh, but on making a careful examination of the pelvis, to which I was led by the fact that a large bed-sore had formed over the sacrum, a thin plate of *fibrin was found at the junction of veins to form the right common iliac, but, being broken away from the mouth of the internal iliac, had allowed a quantity of soft clot-débris to pass into the circulation. This came from the ischiatic vein, which was filled throughout its entire length by old and softened coagula.* In this instance the thromballosis had extended in the veins about the sore on the sacrum, not from that about the amputation-wound of the thigh."†

Finally, we have the following case:

"On March 27th, 1861, I examined the body of a man who died in St. Bartholomew's Hospital under the following circumstances. He fell from a height, and so upon some iron spikes, which penetrated one into either thigh. Diffused inflammation became established along the track of the wounds, more especially on the right side. On the fourth day, without material aggravation of the symptoms, the right saphenous vein became indurated along its entire length. The lungs became congested, symptoms of dyspnoea were added, and he died (typhoid) on the seventh day. The right wound extended across the thigh to its inner side, and unhealthy pus was diffused far and wide *superficial to the fascia lata.* The tissues around the saphena vein were laden with extravasated blood and with unhealthy sanious pus.

"The glands, especially about the upper part of the thigh, were enlarged and blood-stained. The outer coat of the saphena was cedematous, the internal surface of the vessel was rough, and the inner coat was, for the most part, wanting. There was no increased vascularity of the vessel. Its canal was filled with sanious pus and occasional shreds of blood-clots. Just above the inner ankle it was suddenly contracted, and contained a tapering coagulum; and *here was the limit of the surrounding inflammation. The femoral vein at its junction with the saphena was laden with soft, colored clots, which extended into the external iliac.* The lungs were congested and cedematous."‡

* Holmes's System of Surgery, vol. iii. p. 361.

† Op. cit., p. 371.

‡ Op. cit., p. 371.

All these cases, especially the first, seem fully to sustain the view that the clotting only, and always, ceases when no more impure blood can meet the already formed thrombus. Some of the other cases reported by Mr. Callender may appear at first sight to be exceptions to this rule, but from the scantiness of the notes it is more than likely that this is only apparent, and that if the exact blood-territory injured were given, they would bear out my idea quite as fully as the others. In the last of these cases you will note that the intima is described as being roughened, and even absent in portions. By the older pathologists this was considered to be the initial lesion; but when we consider the source of this membrane's nutrition as before mentioned, and some other facts which I shall now detail, the error will, I trust, be self-evident. If we examine any thrombosed vessel, even soon after its occlusion, we shall find the walls infiltrated with a vast number of wandering cells, which insinuate themselves between the layers of the intima as well as between those of the other coats. Thus it is plain that the intima must lose its cohesion and readily tear, especially when its nutrition is cut off from the cessation of the blood-circulation through it.

Mr. Callender, when writing of the diffused suppurative form of phlebitis, says that it is so evidently a disease of the connective tissue surrounding the veins, that it ought really to be re-classed among affections of that system. If, however, the pathological views just enunciated be correct, he is wrong. Instead of the progress of the cellular inflammation being traceable by the thrombosis and hardening of the vessel, and causing the onward spread of the clotting, I should say that the onward spread of the thrombus *caused* the suppuration in the surrounding cellular tissue. When we find that in a healthy system a thrombosed vessel, say after ligation, has its walls infiltrated with what is practically pus, and that its adventitial coat in reality is a part of the connective tissue of the organ, it seems more rational to consider that suppuration occurs merely by extension of the inflammatory process by direct continuity of tissue favored by the depressed condition of the system.

Finally, let me "point the moral and adorn the tale," by considering the practical bearing of this new pathological view on prophylaxis, treatment, etc. First, let me refer to the wonderful results claimed by Mr. Lister and his adherents for the antiseptic method of dressing wounds. They rarely, if ever, have phlebitis occurring in their practice. Then, too, examine the series of successes in major amputations, reported by Mr. Callender a year or two back. Mr. Lister thinks these excellent results are owing to the destruction of microscopic organisms; while to me it

seems more due to the rendering inert retrograded substances, and preventing such retrogression, in conjunction with no mechanical injury to the granulations. Mr. Callender's results are likewise attributable to the original antiseptic cleansing of the wound, and, above all, to the removal, as soon as formed, of the inflammatory products by drainage-tubes, aided by perfect quiet of the limb, obtained by swinging, and again the avoidance of mechanical injury to the granulations by using a camel's-hair pencil instead of a sponge.

From these remarks, it is plain what my moral is, viz., remove, or render inert, all dead or dying tissue and inflammatory products; avoid caustic and irritating applications likely to chemically or mechanically injure the granulations, thus rendering them capable of absorbing. Under this latter head I would place perfect rest of the inflamed part, which otherwise, by the play of the muscles, etc., may mechanically work the septic matters into the granulations. Indeed, Billroth claims that since he has used immovable apparatus in compound fractures, septicæmia, pyæmia, etc., have markedly diminished in his practice. How to fulfil the other indications must be left to the skill and ingenuity of the surgeon in each individual case.

April 27th, 1876.

9. *Mitral stenosis, dilatation of tricuspid orifice.*

By DR. E. E. MONTGOMERY.

Miss H., æt. 34, was sent to me by Dr. Duer at the beginning of the present year, with the following history. Her father is living and healthy; her mother died with consumption; she has a sister suffering with organic disease of the heart.

She has herself enjoyed good health, excepting shortness of breath, until within the last two years. Never has had rheumatism or any acute disease. Two years ago her difficulty of breathing increased; was troubled with a severe cough, and frothy, mucous expectoration, frequent palpitations, and slight orthopnoea. Her menses ceased about this period.

About the 1st of July, 1875, her cough and general condition about the same; she noticed that her feet were slightly swollen; this swelling continued to increase until, at the beginning of the year, when I saw her, the legs were distended to the utmost degree, the skin below the knees had blistered and broken, and serum exuding had set up an erysipelatous condition; the abdomen was moderately distended, fluctuating upon palpation; skin slightly jaundiced; appetite and digestion good, bowels constipated,

urine scanty, alkaline, large deposits of urates, but contained no albumen; breathing difficult, orthopnoea complete; cough troublesome; pulse 120, feeble, irregular, less distinct in right arm; mucous râles were heard over lungs; percussion clear.

Heart.—Area of dullness increased; impulse in normal position, but very forcible. A distinct blowing sound could be heard synchronous with the first sound, most distinctly at the apex, and again over the left third intercostal space; I was unable to distinguish the sound previous to systole. Every third or fourth beat was attended with a marked rotation of heart from left to right, striking the chest and returning to its position with a lunge. The contrast was marked between the force of the heart's impulse and the feebleness of the pulse.

Treatment.—A daily evacuation of the bowels was produced by the use of pulv. jalap. comp.; diuretics were given, beginning with inf. digital. and potass. acet., followed by calomel, squills, and digital., digital., squills, and juniper, and so on through the list, winding up with inf. scoparii, which seemed to produce a little effect. Dropsy still increasing, resort was had to elaterium, gr. $\frac{1}{4}$ daily. Under this the dropsy entirely disappeared in three days, but it returned again in a few days.

In the early part of March she was seen, at my request, by Dr. Duer, who advised tapping; but to this she would not listen.

March 25th she sent for me, and desired to be tapped. The abdomen was stretched tight, the hands œdematous, skin of face and body purple from the obstructed circulation; breathing very difficult; entirely unable to lie down, though she was so weak that she had to be held in the chair.

Assisted by Dr. A. W. Johnston, I did the operation, removing three gallons of a straw-colored fluid. With the exception of some headache and nausea, she was immediately relieved. She was given inf. scoparii, f $\overline{3}$ ii, potass. acet. gr. xx, four times daily, with but little increase in the urine. The second day after the operation the right leg became inflamed and painful; the following day the left became in the same condition. The water flowed from the puncture until her death. No lymph was thrown out. Her strength rapidly failed, and she died April 11th.

Autopsy twenty-four hours after death, in which I was assisted by Dr. Wolford.—Body considerably emaciated, abdomen prominent.

Thorax.—Lungs were found in good condition, no marks of congestion, a slight pleuritic band at upper part of right, but slight effusion in pleural cavities. Heart in normal position; but little fluid in pericardium; both auricles and right ventricle were very much dilated and filled with blood. Upon opening the heart, a large well-formed clot was found attached to

right auricle, and extending into right ventricle. The right side had undergone dilated hypertrophy, the tricuspid orifice being very large. The left auricle dilated, ventricle thinned and flabby, mitral orifice contracted so small as only to allow a lead-pencil to pass; the aortic valves were thickened and roughened, and the coats of the artery had undergone some atheromatous change.

Abdomen.—The cavity contained some two gallons of fluid, with some flakes of lymph. No adhesion had taken place at the point of puncture.

Liver enlarged, fatty.

Spleen small, very firm, filled with blood.

Kidneys large, very firm, capsule easily removed; they were filled with blood, and there were points of extravasation; considerable pus in the pelvis.

April 27th, 1876.

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10. *Heart showing anomalous arrangement of pulmonary valves, these being four in number; fenestration of pulmonary leaflets.*

By DR. J. C. WILSON.

The specimen was removed from the body of a middle-aged woman, who was admitted dying into the Philadelphia Hospital.

There are four semilunar valves at the orifice of the pulmonary artery, three of which are nearly or about the normal size. The fourth resembles the others closely in contour and formation, save that in all its measurements it is smaller, being both narrower and less deep, and is, so to say, crowded in between two of its fellows.

The heart is hypertrophied, especially in the right side; the other valve-systems are normal. A point worthy of attention is the marked thinning of the pulmonary semilunar leaflets in the region known as the *lunula*, and in some of them the separation of the tendinous border of the valve, forming a slit-like opening or *fenestration*. This, viewed in connection with the right ventricular hypertrophy and the fact that the right lung was so compressed by a vast pleural effusion of long duration as to form a small shrivelled mass, and so afford great if not almost complete obstruction to its circulation, goes far to support the theory that such valve-fenestrations are due to long-continued, extensive arterial tension. They are encountered, as the gentlemen of the Society are aware, with great frequency in the aortic valves, but this is the first instance in which I have seen them in those of the pulmonary artery.

The excess in the number of valves is a rare malformation. Up to 1851, Peacock had collected nine instances of it, eight of which were located in the pulmonary valves. Deficiency in the number is relatively of much more frequent occurrence.

Such valve-anomalies as this are of greater interest, perhaps, to the teratologist or embryologist than to students of pathology; yet I have not hesitated to bring the specimen before you, first, because it is a rare one, and in the second place, in the hope that some among you may be able to inform us at what period in development the malformation has taken origin, and whether it be due to perverted growth alone or to ante-natal disease. The condition of the right chest alluded to was due to carcinoma of the pleura, of the variety scirrhus, as was demonstrated by sections prepared for me by Dr. Van Harlingen. The specimen has not been preserved, but was of great interest as an example of *primary cancer of the pleura*, the occurrence of which is denied in most of the text-books.

Dr. Pepper called attention to the fact that the appearances at the point of insertion of one of the small leaflets in the specimen showed conclusively that this seeming malformation was the result of disease. He also alluded to the comparative rarity of fenestrations in the valves of the right side of the heart, and to the fact that although these small perforations may occasionally be the result of malformation, they are far more frequently found associated with conditions that indicate that there has been increased strain upon the valves.

June 22d, 1876.

IV.—THE ORGANS OF RESPIRATION.

1. *Tuberculous laryngitis.*

By DR. LOUIS STARR.

M. M., æt. 27, a sailor, was admitted to the medical ward of the Episcopal Hospital on September 6th, 1875. His family history was bad, his mother and mother's sister having both died of phthisis. He had been temperate in his habits, had never had syphilis, and, though always feeble, had no well-defined symptoms of ill health until the winter of 1873, when he began to cough and to lose flesh. The cough, which at first was infrequent and dry, gradually grew more troublesome. He had several attacks of hæmoptysis, and soon afterwards commenced to expectorate muco-purulent sputa. These symptoms progressed steadily up to July, 1875, when his voice became hoarse, and he noticed slight pain in the region of the larynx on-swallowing. He did not give up work, however, before the middle of August. At that time the pain, on deglutition, was so great that it was almost impossible for him to swallow solid food, and, not being in a position to obtain proper liquid diet, he became exceedingly prostrated. On admission, he was very weak and much emaciated, his tongue was brown and dry, there was urgent thirst, and he craved food, but was totally unable, on account of the pain produced, to swallow anything except liquids, and these only in small quantities. His bowels were loose. Besides the pain occasioned by deglutition, there was constant soreness in the larynx, and a sensation of tickling which gave rise to violent paroxysms of coughing. His voice was very husky, at times almost suppressed, and the act of phonation seemed to cause suffering. The respiratory movements numbered forty-eight per minute. The cough was painful and severe, and was accompanied by the expectoration of nummular muco-purulent sputa, most abundant in the early part of the day. His pulse was 120, quite feeble, and he had well-marked hectic and night-sweats. Physical exploration of the chest revealed the presence of a large cavity, surrounded by an area of solidification in the upper lobe of the left lung, while at the apex of the right lung there was slight dulness on percussion, and broncho-vesicular

breathing. There was no cardiac murmur. A satisfactory laryngoscopic examination could not be made, because of his weakness and the great irritability of his throat: the only view obtained was of the epiglottis and false vocal cords; the former was partly hidden by a layer of mucus, and the latter appeared to be congested and thickened. For a week after coming into the hospital his general condition improved, but he subsequently sank slowly, and died on September 30th.

The *autopsy* was made eighteen hours after death. The body was greatly emaciated. The upper lobe of the left lung was firmly adherent to the chest-wall, and contained a cavity about as large as a hen's egg, lined by a thick, smooth membrane, and partly filled with purulent fluid; the remainder of the lobe was infiltrated by a caseous material, which had commenced to undergo softening, and broke down readily under the finger. Throughout the lower lobe several small collections of tubercle were scattered. The apex of the right lung was occupied by a tuberculous deposit, the rest of the lung being healthy. The heart was small and somewhat fatty, but all the valves were normal. On removing the larynx, what was left of the epiglottis, viz., the lower two-thirds, presented a peculiar worm-eaten appearance, due to the existence of deep ulcers with irregular edges. These were most numerous on the laryngeal surface. The upper margin of the epiglottis was thin and very ragged; in its centre there was a perforation, and on either side of this the tissue-destruction had been so great as almost to separate the middle from the lower third of the cartilage. The mucous membrane lining the interior of the larynx was thickened and ulcerated; the ulcers were situated one on the right vocal cord, another in the thyroid angle and on the right side of the thyroid cartilage, and a third in the inter-arytenoid space. There was also partial ossification of the cricoid cartilage. None of the abdominal viscera exhibited any abnormal appearances except the mesenteric glands, some of which were enlarged.

Dr. R. M. Bertolet said what struck him as most remarkable in this specimen was the entire escape of the vocal cords and the arytenoid cartilages, which are so commonly involved. The fact that the ulceration is at the apex of the epiglottis rather than at the base is a suspicious one, this being common in syphilis rather than in phthisis, although at times we have the ulcerations of the latter disease also destroying this appendage entirely; more frequently, however, the glandular structures at the base of the epiglottis are the site of the ulcerations. *October 14th, 1875.*

2. *Follicular ulceration of the larynx concurrent with phthisis.*

By DR. J. SOLIS-COHEN.

The larynx and trachea were removed from a young man 26 years of age, who had died of extensive tuberculosis, after an illness of about eighteen months. The entire lungs were so riddled with cavities and broken-down tissue that hardly a cubic inch of healthy lung could be found at any one point. The larynx exhibited the not unusual marks of follicular ulceration at the base of the epiglottis, about the arytenoid cartilages, and so on; but the point to which attention was directed was the condition of the vocal cords, which had become transformed into huge firm folds, larger in volume than those which represent the ventricular bands, or so-called false vocal cords. October 28th, 1875.

3. *Larynx from a case of diphtheria; tracheotomy.*

By DR. W. G. PORTER.

Gracie P., æt. 4 years and 9 months, after a day or two of feverishness and malaise, began to complain of sore throat. On Thursday, January 6th, Dr. J. G. Allen, the family physician, was sent for, and he found her in a feverish condition, with diphtheritic deposits on the tonsils. On Friday she was worse, and on Saturday respiration became so much embarrassed, although the tonsils looked better, that I was asked to see her, with a view to the performance of tracheotomy. The only deposit to be seen on inspecting the fauces was on the uvula; but, as the difficulty in breathing was extreme, the operation of tracheotomy was performed at eleven P.M. on Saturday, January 8th. Chloroform was used, and two ligatures were passed around the isthmus of the thyroid gland, and the isthmus divided between them. The first three rings of the trachea were divided, and, as the only tracheotomy-tube which I had with me was too large, a silver wire was passed by a double stitch through each side of the opening in the trachea, and the wires fastened to loops of tape passed around the shoulders, thus securing the patency of the opening in the trachea. There was no hemorrhage. On opening the trachea a large quantity of thick, tenacious mucus and some false membrane was expelled, and immediately afterwards the child ceased to breathe; the heart, however, continued to act, and artificial respiration speedily restored the child. During the rest of the night she slept pretty well and took considerable nourishment. On

Sunday she still continued to do well, taking nourishment and playing with her doll. In about twenty-four hours false membrane was noticed in the wound. On Sunday night I removed the wires and inserted a tracheotomy-tube. On Monday her condition was fair, the only really bad symptoms being the presence of false membrane in the wound. On Monday evening, however, she began to be restless, and the breathing again became hurried and difficult, terminating in a choking spell, which was partially but not entirely relieved by the expulsion of some thick, tenacious mucus. At one A.M. there was another and still more severe paroxysm, the child beating her breast and abdomen with her hands, and becoming perfectly blue in the face. This was followed by great prostration, and the child gradually sank and died. During the whole evening there was tympanitic distention of the abdomen, and frequent but small evacuations from the bowels of a watery character and accompanied by straining.

Post-mortem examination, thirty-six hours after death.—The larynx was found filled with false membrane, patches of which were found in the trachea, which was very red and inflamed. The bronchial tubes, up to the bifurcation, were completely filled up by an extremely thick and tenacious mucus. The lungs were congested, but there was no pneumonia.

Dr. Nancrede asked whether death was sudden, or anything had been discovered blocking up the bronchi: also, whether there was recession of the chest-walls.

Dr. Porter replied that the death could not have been called sudden. Early in the evening there was a sudden attack of dyspnoea, when he was sent for; but on practising artificial respiration the child promptly rallied. At one o'clock A.M. there occurred a second attack like this, when the child was again resuscitated; but at two o'clock she began gradually to sink, and died. The bronchi were found filled with mucus, but nothing more, and there was slight recession of the chest-walls.

Dr. Nancrede said he had operated this autumn, and the child did very well for two and a half days. The child began gradually to sink, and died. There was here marked recession of the walls of the chest.

Dr. A. F. Müller said he had two cases of operation this fall, in which the children both did well for twenty-four hours, when there occurred this same gradual sinking and death. There was, however, very marked struggling, and decided recession of the chest-walls. The struggling was as marked as before the operation.

January 13th, 1876.

4. *Circumscribed empyema; lesions of aortic and mitral valves; granular kidneys.*

By DR. J. C. WILSON.

The specimens presented were removed from the body of a man who died in the wards of the Philadelphia Hospital. There is no record of the clinical history.

J. G. S., æt. 49; white; native of Maine.

Autopsy, thirty hours after death.—Rigor mortis well marked; great emaciation; no œdema.

Lungs free at apices; right lower lobe adherent to diaphragm at base. Its outer and lower surface was separated from the parietal tissue by an irregular space, which contained about two fluidounces of thickish, yellow, inodorous fluid. The walls of this cavity were dense, firm, and extensively calcareous; on their inner surface rough and irregular, by the outer adherent on the one hand to the walls of the chest, on the other to the surface of the lung. No communication existed between the cavity and any bronchus. The boundaries of this cavity were constituted by the firm inflammatory coalescence of the pulmonary and costal pleural surfaces. The lower portions of this lung were but slightly crepitant; they were firm and dense, showing increased connective tissue, large bronchial tubes and blood-vessels. Its apex was consolidated, and the seat of caseous deposit; there was no cavity. The left lung was healthy, save at some few points of impaction near the apex. There were no pleuritic adhesions and no effusion on the left side.

The *heart* was firmly contracted; pulmonary and tricuspid valves normal; edges of mitral leaflets thickened; aortic valves rigid, with atheromatous patches projecting into the sinuses of Valsalva. Two of the leaflets were united in such a way as to present on their ventricular aspect an unbroken surface, and in the aortic aspect an imperfect, irregular, atheromatous septum formed by their united edges.

The *liver* was contracted; it weighed two pounds and thirteen ounces.

Spleen very small.

Kidneys smaller than normal, and granular.

Dr. Pepper said it was to be regretted that the peculiar circumstances rendered a closer clinical examination impossible. Such a condition as this he thought not common, and he thought the physical signs by which it is to be distinguished from solid intra-thoracic growths are not well determined. He had recently had the opportunity of studying a case of cir-

cumscribed empyema of the left side, with a cavity not much larger than this. According to the history furnished by the very intelligent physician who had charge of the case, it appeared to commence as a diaphragmatic pleurisy with no physical signs; gradually there developed an area of dullness in the left back, below the angle of the left scapula, and when Dr. P. saw him there was not absolute flatness, but flatness on superficial percussion, while on forcible percussion there was slight resonance, especially during inspiration. On auscultation there was distant transmitted blowing breathing over this region. Vocal fremitus was impaired, more so than vocal resonance. Alterations in the position of the patient's body made no difference in the dullness. There was a good deal of hard paroxysmal cough without expectoration. There was radiating pain down towards the abdomen along the lower intercostal nerves. There was great irritability of the stomach, and it was difficult to nourish the patient. There had been sweating for but one or two nights; his temperature was $101\frac{1}{2}^{\circ}$, and pulse 96.

The gradual appearance of the physical signs, the progressive exhaustion and emaciation of the patient, created the suspicion that there was a solid malignant growth in connection with the growth of the left lung, though after a careful study of the physical signs a diagnosis of circumscribed empyema was established. An exploratory puncture to the depth of one and a half inches was accordingly made without any escape of fluid; a second puncture was followed by the discharge of half a pint of fetid pus. What added to the difficulty of the case was that at this time there was extensive subcrepitant râle over the base of the right side posteriorly, a symmetrical lesion which seemed to favor the supposition that the disease might be of a constitutional character, either tuberculous or cancerous. It proved to be only collateral œdema, which after forty-eight hours subsided, and the right lung became entirely normal. Improvement continued, and about a week after the first operation, just before it was intended to tap a second time and introduce a drainage-tube, the abscess opened into the left bronchus, since which the patient has been making a satisfactory recovery. Once since then, when the discharge of pus was interfered with by some temporary cause, the right lung again became seriously implicated, with impaired motion; feeble respiration, and subcrepitant râles, and there again rose the suspicion that there might be an outburst of tuberculosis; but with the return of the discharge all these symptoms disappeared.

January 27th, 1876.

5. *A case presenting specimens of chronic catarrhal pneumonia; abscess of the right kidney; tubercular ulceration of the ileum; disease of left hip-joint.*

By DR. FREDERICK P. HENRY. Clinical history by DR. LOUIS STARR.

"Annie D., 47 years of age, married, was admitted to the Episcopal Hospital on July 6th, 1875. She had never had syphilis, had always been perfectly temperate, and had enjoyed fair health until the winter of 1874, when she began to suffer from pain in the left hip and thigh. The pain, which at first was paroxysmal and neuralgic in character, either excited, or if present greatly augmented by movements of the limb, gradually grew constant and became associated with difficulty in walking. When admitted, there was considerable stiffness in the left leg, so that even with the aid of a cane she was able to walk but a short distance; there was a constant dull aching sensation in the left hip, and at times severe pain extending from this situation along the sciatic nerve to the knee; there was no swelling about the hip, nor any apparent difference in the size or length of the legs. Pressure immediately behind the trochanter major caused acute pain, but there was no pain on percussing the trochanter, and but little on flexing or extending the thigh. The patient was somewhat emaciated; her appetite and digestion were moderately good; there were no symptoms of disease of the heart or lungs, and these organs seemed on superficial examination to be healthy. The urine was carefully tested and found to be normal. After admission there was little change in her condition, except that the difficulty in walking increased, up to July 28th, when the whole of the left leg became tender to the touch, and the foot and ankle œdematous. On August 15th there was marked œdema of the whole leg; the skin, especially on the posterior surface, presented a livid and mottled appearance, there was considerable pitting on pressure, great tenderness, and the temperature, as estimated by the hand, was lower than that of the other leg. No pulsation could be felt in the dorsal artery of the foot or in the popliteal artery, and very little in the upper portion of the femoral. No abdominal or uterine tumor could be discovered; the heart was found, by careful physical exploration, to be healthy, and the urine was again examined without anything abnormal being detected. On September 7th the swelling in the left leg had greatly diminished, but there was a peculiar roundness of outline and distention of the tissues about the hip, with flatness of the left gluteal muscle. She rested constantly on the back or right side, with the left thigh drawn up towards the

abdomen and adducted. There was constant soreness in the hip, and pain was excited by percussion over the trochanter or by flexing or extending the thigh. The neuralgic pain, however, had entirely disappeared. The right leg was swollen and presented the same characters as had already been observed in the left leg, though in a less degree. During the above interval (Aug. 15th–Sept. 7th) she had an obstinate attack of vomiting, which lasted four or five days, and was followed by great prostration. In the latter part of September she had a second protracted attack of vomiting, but in other respects her condition remained unchanged until October 12th, when the wards were transferred and the case passed from my observation."

I am indebted to Dr. Starr for the foregoing history.

I took charge of the case on January 1st, when I found the woman sitting up and in pretty good condition. She made no complaint of her hip, and only suffered from occasional attacks of diarrhoea which were readily controlled. She continued in much the same condition until within a few days of her death, when a somewhat sudden change for the worse occurred; this was characterized by great prostration and a tendency to syncope. Her death was typically by asthenia, the mental faculties being unimpaired until the last.

The subject of the above sketch was rich in pathological specimens. I have here the left lung, the kidneys, a portion of the ileum, and the head of the femur. The lung is far advanced in chronic catarrhal pneumonia; at the apex the parenchyma has broken down so as to form a small round cavity over which the pleura is somewhat thickened. The smaller bronchi are seen on transverse section to be thickened and dilated. Here and there the cut surface shows portions where the cell-infiltrated parenchyma is undergoing the caseous metamorphosis. The free surface of the lung is unevenly tuberos, portions of healthy tissue intervening between similar areas of indurated, darkly pigmented patches, in which the condition resembles the so-called slaty induration. These changes become less marked as we approach the base of the lung, which is congested, probably hypostatically.

We can form but a very imperfect idea of the air-containing power of this lung during life from its present condition. It is no exaggeration to say that the percussion-note over this lung was extraordinarily tympanic. I cannot fully account for this fact, although the wasted condition of the tissues covering the thorax and the dilated condition of some of the smaller bronchi may help to explain it. At any rate, there is no doubt that the inspiratory act was capable of conveying large quantities of air

into this lung-parenchyma. This explanation of the percussion sound would also account in some degree for the supposed deceptive *post-mortem* appearances of this lung; for air contained in small but dilated bronchi would, I think, be more easily expelled by atmospheric pressure than the residual air of the vesicles. I know of no other way of explaining the physical signs than by supposing that many of the bronchi leading to occluded vesicles were pervious, while others were in a condition of vicarious bronchial emphysema, and that the pressure of the atmosphere has been sufficient to expel the greater portion of the air contained in them.

The head of the femur is seen to be eroded. I am informed by the resident physician, Dr. Ziegler, who made the autopsy, that the bone was very easily removed, owing to its being almost dislocated. The joint-cavity was filled with pus.

There are several ulcerations in the ileum which are undoubtedly tubercular; this is shown by their direction, which is transverse, and by the secondary miliary eruption in the sub-serous connective tissue. One of these ulcers, by the induration of the tissues forming its base, has caused a decided stricture; nevertheless, there was no accumulation of fæces above this point, nor did the stricture occasion any inconvenience during life.

The most curious specimen, however, which this subject affords is the right kidney. This gland is converted into a sac encapsulating a quantity of mortar-like substance which replaces the greater portion of its proper structure. A portion of the ureter accompanies the specimen, and its lumen is seen to be obliterated. A fragment of the material contained in this kidney was shaken up with water in a test-tube, so as to form a milky emulsion, and a drop of this examined under the microscope: it consisted entirely of pus-cells and granular detritus, the result of their disintegration. Upon the nature of the pathological process giving rise to this abscess, I would not venture an opinion without further dissection of the gland: it may have originated in the parenchyma and opened into the pelvis, causing a secondary pyelitis and subsequent occlusion of the ureter, or it may have originated in the pelvis from obstruction in the ureter. The bladder was not examined.

The deposit is further interesting as bearing upon a mechanical property of the kidney, namely, elasticity. The original abscess, at its acme, must have occupied a far greater space than in its present inspissated condition, and yet the parenchyma, formerly so greatly distended, is now closely applied to the circumference of the abscess. The minute anatomy of the kidney may help to explain this phenomenon: the gland is almost entirely

made up of secreting tubules and blood-vessels, both of these arranged in a very peculiar manner. The convoluted tubes of the cortical portion would appear, from their tortuous course, to be equally capable of yielding to a force which tended to approximate their extremities, or to one which tended to separate them still further, while the smaller blood-vessels, being themselves exceedingly elastic by virtue of their muscular coat, would, it is to be presumed, readily yield to a distending force. The resistance which would be opposed by the capillaries need not be taken into consideration, since these vessels are distinguished by their power of adapting themselves to circumstances. The subsequent recoil, or retraction, of the organ, is susceptible of a different explanation. It must be borne in mind that the ureter is occluded, and therefore with the absorption of the exudation there is, as it were, a constant tendency towards the formation of a vacuum, which is prevented by the retraction of the encapsulating kidney. It has clung to the disappearing exudation as the thoracic walls cling to the retreating lung. In short, there are three factors which may unite in producing such a result, namely, the elasticity of the organ, the suction-force above described, and perhaps some degree of cicatricial contraction.

In conclusion, the question arises whether there is any causative relation between these four different morbid conditions, and, if so, what is its chronological order?

The presence of tubercle, according to the latest researches in experimental pathology, presupposes the existence of some inflammatory focus. Here we have tubercle in the intestine, and *three* inflammatory foci, situated respectively in the lung, kidney, and hip-joint. Now, there are two methods of infection: one by way of the afferent vessels, the veins and lymphatics; the other, by the arteries: the former is more apt to be local; the latter, general. Is the former method possible here? On regarding the anatomical relations of the parts, the answer must be in the negative. The intestinal lesion, which we must regard as secondary, is of all the four the most peripheral. The second method of infection is the only one here possible. I am inclined to consider the lung as the primary inflammatory focus, and the morbus coxarius and intestinal ulcers as the result of a general blood-infection of somewhat less virulence than pyæmia. Such, as is well known, is the present doctrine of the nature of tuberculosis. The resemblance to pyæmia is brought out in a very striking manner by the resemblance of one of the secondary lesions to one of the most common in the pyæmic process. I refer to the suppurative arthritis. I consider the kidney-disease as independent of the three others which I have thus associated.

I omitted to mention in the proper connection that I found no albumen in the urine of this patient, and that the left kidney appears to be fatty. The excretion of urine seems to have been properly performed by one diseased kidney.

Dr. Sinkler said the patient was under his care from October, 1874, to June, 1875. From December she had had a troublesome cough with fever, but there were no physical signs of organic trouble in the lungs. It may be that it was at that time that the phthisis began, although the patient appeared entirely to recover, and there was no cough when he went off duty.

Dr. M. O'Hara desired to know something more about the relation of the physical signs, as reported by Dr. Henry, to the condition of the lung found after death, and what had been the diagnosis.

Dr. Henry said he was at a loss to explain the physical signs otherwise than he had done in his paper just read. He knew of no condition except emphysema which could give so general a resonance as was afforded by the chest of this patient before death.

Dr. John Guit ras said that in all cases of solidifications in which he had found tympanitic percussion it was on the left side, and he had thought it was due to the conduction of the tympany of the stomach. So most of the cases which he had read were those in which there was a pneumonia of the left side. Walsh, however, reports two cases of right-sided pneumonia, in which the tympanitic percussion was present, and he attributes the sound to an exudation of air into the pleural sac without any perforation of the pleura. Even in acute pneumonia it is sometimes present. In two cases which had come under Dr. G.'s observation, the tympanitic resonance was so marked that the idea of pneumothorax suggested itself; and in one case particularly there was well-marked metallic tinkling, the cause of which he determined to be connected with the distended stomach, by observing that it occurred only during deglutition.

Dr. Guit ras said he had been studying somewhat this subject of tympanitic resonance in connection with solid lungs, and had come to the conclusion that the degree of tension of the chest-walls has much to do with it. If a healthy resonant chest-wall be selected, and the two hands be laid against it with a degree of force sufficient to prevent its vibration, the percussion-note is immediately deadened, showing that the resonance is produced by the vibration in the tense membranous wall itself. Now, if there be a distended lung and a distended stomach below a consolidation, we have in the chest-wall and abdominal wall covering both a continuous tense membrane which gives rise to a tympanitic note.

Dr. Henry said the percussion was tympanitic on both sides.

Dr. Guitéras said that if it was present on the right side he would consider it due to vicarious distention of the healthy lung.

Dr. Henry said with regard to pressure upon the chest-walls, he thought it was the universal opinion that it was vibration in the chest-walls that caused resonance, and that pressure upon the walls, interfering with this vibration, impaired the resonance.

Dr. Guitéras said that many teachers had taken pains to prove the contrary, and it was very interesting to read Dr. Skoda's account of his experiments on this subject, his object being to prove that the resonance was only due to the air within the chest-wall, while Dr. Williams, of London, tries to show that the cause is to be found in the membrane. Skoda says that the thoracic wall cannot produce the percussion-note, because portions of this wall when detached prove not to be sonorous. But Dr. G. thought that Skoda, by doing this, deprived these portions of the conditions which made them sonorous; they were no longer stretched over an elastic skeleton forming a sonorous box. Skoda would also find it impossible to make any amount of air vibrate into sound, without placing it under certain favorable circumstances.

Dr. Henry remarked that the vibrations of the air within the thorax are, of course, secondary to the vibrations produced by percussing the chest-walls. When a tuning-fork is struck, it is the vibrations of the air that excite the sense of hearing, produced by the movements of the tuning-fork; we cannot separate one from the other.

Dr. Jas. C. Wilson said it seemed to him that in the consideration of this question of tympanitic resonance, it must be remembered that percussion-resonance is due to two factors: one, the vibration of the volume of air within the chest, and the other, the vibration of the chest-wall itself. It is to be borne in mind that the air within the chest-cavity is held there by lung-tissue in a condition of distention, that there is an amount of tension on the inside, as is proved by perforating the chest-wall in the cadaver, an operation followed by entrance of the air and collapse of the lung. The collapsed lungs yield on percussion no longer the normal resonance, but a more or less decidedly tympanitic note. Herein lies the explanation of tympanitic resonance in congested, and even pneumonic, lungs. In this condition, more or less of the air-vesicles being occluded, the air is thus expelled from the lungs, and the state of natural tension no longer exists; consequently, the condition of the whole mass of the chest-wall and the contained air-vesicles becomes analogous to that of the lung when air has been admitted into the pleural cavity.

Dr. Guitéras said that by the exudation of inflammatory products into the lung-tissue the solid contents of the chest-cavity are increased, and instead of the collapsed condition you have rather a distended one. If, at the same time, there is sufficient air to allow of vibration of the chest-wall, you get a note on percussion which is tympanitic, while if there is not sufficient air you get a dull resonance.

Dr. Wilson said the clear percussion-note is due to the fact that the air-vesicles are distended; but as soon as the whole mass of lung-tissue is in the state in which the walls of the air-vesicles are no longer distended, you have the very condition demanded for the production of a tympanitic note. It seemed to him, also, that this line of thought would point out the best explanation of the tympanitic resonance overlying pleuritic effusion. By reason of pressure, the normal tension of the lung-tissue is done away with, and there results a flaccid condition of the cavities.

Dr. Guitéras said, in connection with pleural effusion the importance of the vibrations of the chest-wall is very great. When the surface of a vibrating membrane is diminished, we have a higher note; so when we have effusion, the portion of the chest-wall in front of the fluid is prevented from vibrating, and above it you throw into vibrations a smaller area of membrane, producing a tympanitic note. While upon this subject he desired to ask the members of the Society what the German authors meant by the *tympanitic percussion-sound*. They constantly speak of tympanitic percussion as being always present over the consolidated lung of acute pneumonia, a statement that you never hear from American or English teachers.

Dr. Wilson stated that Paul Niemeyer explains it as follows. The physical conditions which give rise to tympanitic percussion are these: a volume of air in sufficient quantity contained in a space of which the walls are not too tense. The conditions may be illustrated by a bladder containing water and partly filled with air; such a bladder will give on percussion a tympanitic note. If now you continue to inflate the bladder until the walls are tense, you no longer have on percussion tympanitic resonance, but a dull note. The *quality* of the *tympanitic* and that of the *clear* note are essentially different.

Dr. Henry said the real question of interest was this, namely, what was the condition during life of this *individual* lung? Does its present indurated condition represent that which then existed? He could not think so; being convinced that such an amount of consolidation could only give rise to a dull percussion-sound. The conditions during life must have been widely different. In his paper he had broached the theory that the

air, giving rise to the tympanitic resonance, had been contained in dilated bronchi, which air has been expelled by atmospheric pressure. A condition of dilatation and perviousness of the smaller bronchi may even co-exist with an occluded state of the vesicles to which they lead; such a condition, according to the modern doctrine of catarrhal pneumonia, being produced by inhalation of secretion. This condition is found in the catarrhal pneumonia complicating measles.

Dr. Hutchinson said that even in cases where the right was the lung involved in the inflammation, and where consequently the sound could not be referred to conduction from a distended stomach, tympanitic resonance of high pitch was, in his experience, frequently obtained by percussing over the front of the chest. He considered the sound to be tympanitic in quality, although it was undoubtedly of much higher pitch than the stomach-note, which was generally accepted as the type of tympanitic resonance. It resembled more closely the sound obtained by percussing over the intestines, and he was, therefore, inclined to attribute it to the vibration of air in the bronchial tubes, the solidified lung acting as a good conducting medium.

February 10th, 1876.

V.—THE GENITO-URINARY ORGANS.

α. KIDNEYS, BLADDER, ETC.

1. *Large white kidney, with albuminoid degeneration of the Malpighian bodies.*

By DR. LOUIS STARR, for DR. WHARTON SINKLER.

History by Dr. Starr.—Harriet R., æt. 22 years, a sempstress by occupation, had, when quite a child, an attack of scarlet fever, unaccompanied, so far as she remembered, by any renal complication. After this her health remained moderately good until the winter of 1872, when she began to lose strength, and to be annoyed by a dry, hacking cough. Several months later she had two profuse hemorrhages from the lungs, succeeded by greater weakness and more troublesome, though looser, cough, the matter expectorated being muco-purulent in character. Notwithstanding the continuance of these symptoms, she was able to work up to February, 1874, at which date she was admitted to the "Hannah Ward" of the Episcopal Hospital. Shortly afterwards she had another hemorrhage, but subsequently improved steadily, under treatment, and left the hospital in June, to resume her occupation. At that time there was no suspicion of kidney-disease. She was able to work for a short period only, and returned to the hospital in August; on admission she was very anæmic and much prostrated, there was considerable ascites and œdema of the feet and legs, severe cough, and dyspnœa and palpitation of the heart on exertion. During the next eight months, although her strength increased and the dropsy varied greatly, being sometimes well marked while at other times it was almost absent, there was little change in the other symptoms. Early in May, 1875, the urine, which had previously been abundant, began to diminish in quantity, there was considerable pain in the lumbar regions, and at intervals violent attacks of headache, with dulness and languor, the latter occurring when the urine was most scanty, and always passing off with vomiting or diarrhœa.

On July 3d, when the case came under my observation, the following symptoms were observed: face pale, and surface of body generally waxy in

hue; great emaciation and weakness; slight œdema of eyelids and upper part of face; abdomen somewhat distended, and a small collection of fluid in the peritoneal cavity. Tongue clean, appetite poor, digestive powers impaired, and a tendency to obstinate vomiting and diarrhœa. Respiration 36 per minute; cough frequent; expectoration moderately free; sputa muco-purulent and occasionally streaked with blood. There was dulness on percussion over the upper lobes of both lungs, more marked on the right side, and in the same situation auscultation revealed moist crackling and large bubbling râles and broncho-vesicular breathing, the râles being more numerous on the right side, and the bronchial character of the breath-sounds more decided on the left; there was no apparent difference in the shape or movements of the two sides of the chest. The pulse was weak, beating about 96; the cardiac sounds were feeble, but there was no valvular murmur, and the apex-beat was in the normal position. The urine was much decreased in amount, slightly cloudy, acid in reaction, had a sp. gr. of 1018, was highly albuminous, and on standing deposited a whitish sediment, which was found to contain epithelial, fatty, and hyaline casts. The patient complained of headache, and of soreness in the region of the kidneys, and stated that she was most comfortable after vomiting, when the expectoration was abundant, or else during an attack of diarrhœa.

Throughout July, August, and nearly the whole of September, the headache continued and was subject to exacerbations, when the pain became violent, and she passed into a condition of semi-stupor; these exacerbations, of which there were eight in the period mentioned, lasting from one to three days and occurring at irregular intervals, were always attended with flushing of the face, dry skin, and greatly diminished secretion of urine, or constipation, and were at first relieved, either by spontaneous vomiting and diarrhœa, or by the administration of saline purgatives, and later by the combined use of purgatives and steam-baths. The cough also increased, the sputa became nummular and more purulent, the physical signs connected with the lungs more marked, and dyspnoea and palpitation readily excited. Her appetite, on the other hand, improved, the ascites disappeared, there was no œdema of the legs, and merely trifling puffiness of the face. She remained, however, much prostrated, and was confined to bed for the entire three months, with the exception of a few days in the latter part of August. The urine voided each day in the above time was carefully measured; the amount ranged from one to five ounces, but, as there was nearly constant diarrhœa, it is probable that, though there was undoubtedly a diminution in the quantity, a larger proportion

was expelled during defecation, and therefore lost, than was collected. The microscopical characters of the urine remained unchanged; its specific gravity was about normal, 1018 to 1022, and the albumen varied from one-eighth to one-fourth of the bulk tested. On September 22d, the day after the first steam-bath, the urine became more copious, clearer, and its specific gravity fell to 1015. Next day another bath was given, and in the succeeding twenty-four hours she passed seventy-four ounces of urine. On September 25th, the urine decreased, and she had an attack of uræmic headache and stupor, rendering a third bath necessary. Afterwards her condition improved until October 12th, when the wards were transferred to Dr. Sinkler.

On October 12th and 13th, the urine was passed very freely, and she seemed to be doing well, though there was no action of the bowels. On the 14th the quantity of urine was greatly lessened, the bowels continued constipated, and headache, which had been absent since September 29th, returned. After this, vomiting and diarrhœa set in, the œdema of the feet and legs reappeared, her skin became hot and dry, the pulse frequent and feeble, and the secretion of urine almost suppressed. The headache likewise increased, and, in spite of the means employed to afford relief, she gradually became comatose, and died on October 31st.

The *post-mortem* examination was made twenty-one hours after death. The body was much emaciated, and there was considerable œdema of the feet and legs. On opening the thorax, both lungs were found to be firmly bound to the chest-walls by old pleuritic adhesions. In the upper lobe of the right lung there were two communicating cavities, the larger being about the size of a walnut; these cavities had irregular walls, and were filled with pus mingled with broken-down lung-tissue. The rest of the lobe was occupied by a cheesy deposit. The middle and lower lobes were congested, and the former contained several isolated collections of caseous substance. The upper lobe of the left lung was indurated, and the bronchial tubes traversing it were dilated. The lower lobe was congested, and at its upper posterior part there was a cavity an inch in diameter, lined by a thick, smooth membrane, and filled with purulent matter; the pulmonary tissue immediately surrounding this cavity was infiltrated with a material resembling that noticed in the upper and middle lobes of the right lung. The pericardium, which was healthy, contained half an ounce of straw-colored, slightly flocculent liquid. The heart was small, and the muscular tissue was pale and flabby, but all the valves were normal. There was no fluid in the peritoneal cavity. The liver weighed three and three-fourths pounds, and was markedly fatty. The kidneys were large, weighing

together sixteen ounces, and presented the appearances of that form of degeneration known as "large white kidney," with evidences also of amyloid change in the Malpighian bodies. Nothing abnormal was observed in connection with the other abdominal viscera.

Dr. James Tyson remarked upon a point of therapeutic importance elicited in the history of this case. He referred to the increased secretion of urine which always succeeded the artificially-induced sweats. This confirmed some observations of his own, made about a year ago, in the wards of the Philadelphia Hospital, where, in a case of Bright's disease with large white kidney, he had found by volumetric analysis the amount of urea in the twenty-four hours' urine increased, while a series of daily sweats were carried out by the use of hot-air baths. Although it would, at first thought, be expected that where elimination by the skin is increased, that by the kidneys would be proportionately diminished, the opposite result is entirely consistent with what we would expect in cases of dropsy, where the movement of the blood is sluggish from external pressure; the effect of the sweating being to diminish this and to facilitate a more rapid movement of the blood. The blood moving more rapidly through the kidney, secretion would take place more freely, and more urea would be separated in a given time. Now, if we add to the urea eliminated by the kidneys the increased amount which is thrown off by the skin during the sweat, it is evident that we have in this mode of treatment a powerful lever for good in the treatment of severe forms of Bright's disease, one which he thought was too constantly overlooked.

November 11th, 1875.

2. *A case of cheesy deposits in the kidney.*

By DR. HARRISON ALLEN, for DR. GEO. STILES, of Conshohocken, Pa.

History by Dr. Stiles.—Mrs. J. P., æt. 24,—maternal grandmother. died of phthisis,—came under my care in June, 1875, with a history of continued ill health for two years following a severe labor.

Physical exploration of chest discovered no pulmonary lesion; there was no cough, no expectoration; tongue dry and covered with white fur; complete anorexia, pain more or less constant and severe in right lumbar region; troublesome diarrhoea; incontinence of urine, and great emaciation; had never menstruated since birth of child.

Her inability to retain the urine made it difficult to obtain any for

examination. When obtained and examined, it was found to contain some pus and altered blood-corpuscles, and was exceedingly acid in its action. The diarrhoea was mostly at night. The discharge contained particles of undigested food. She was placed upon iron, quinia, and strychnia, with opium suppositories. Upon this treatment she seemed to improve, and by the aid of a very ingenious apparatus made by Mr. Seeley, of Philadelphia (to hold the dribbling urine), she was enabled to be about and take outdoor exercise. She continued to improve until September 20th, when she suffered from a severe prolonged colliquative diarrhoea, having as many as ten evacuations in twenty-four hours. Opiates and astringents of various kinds were given, which, however, seemed to have little beneficial effect. By the 20th of October her emaciation was extreme. It was with difficulty that food in the smallest quantities could be retained, so irritable had the stomach become. Pain was constant, severe, and diffused over the whole abdominal region; sleep could be obtained only by opiates, which were given in suppositories. Brandy, milk, and beef-essence, with astringent injections, made up the treatment. Her condition thus remained, with little alteration, until November 8th, when dropsy of the lower extremities developed itself; the pain in the right lumbar region became more severe, accompanied with nausea and vomiting and great thirst; the diarrhoea excessively profuse; skin cold; face sunken and pale. There was also marked wakefulness, the patient lying mostly on the back, because any other position caused great dyspnoea. On the 12th she became quite delirious, and so remained until the morning of the 14th, when she was seized with convulsions, in which she died.

The following results were revealed by the *autopsy*:

Body much emaciated.

Heart normal; pericardium contained about one ounce of clear, straw-colored serum. Cheesy deposits at the apices of both lungs, but no cavities.

The abdominal cavity contained about one pint of normal serum.

The right kidney was enlarged, measuring four and a half inches in length and three inches in width, and was almost entirely disorganized, numerous cavities, varying from the size of a grain of corn to that of an English walnut, being disseminated through its substance. Other foci were occupied by a caseous substance. The parenchyma between these local evidences of diseased action was chronically inflamed. Extensive perinephritis was present. The dense, unyielding mass resulting extended from the iliac fossa to the diaphragm. The capsule of the kidney was entirely lost within it.

The vermiform appendix and cæcum were so fixed to the iliac fossa that they had to be dissected from their bed. The ascending colon, duodenum, and corresponding supra-renal capsule were also adherent, and in a less degree the gall-bladder, and the under surface of the right lobe of the liver. The left kidney was free from deposit, but was hyperæmic; it was slightly larger than the right. The corresponding ureter was dilated and was full of clear urine; it measured transversely about one-third of an inch. The bladder was the seat of chronic cystitis; the viscus was empty. Circumstances attending the *post-mortem* prevented more extended examination of the abdominal organs. The intestines were not opened.

Dr. R. M. Bertolet said it was well known that what now are termed cheesy inflammations of the renal organs were formerly all attributed to tuberculosis. And this view is still held by some pathologists as regards these deposits in the kidneys. Those who take this view say that the cheesy infiltrations are formed by the confluence of numerous miliary tubercles, which undergo fatty degeneration and break down. Another reason for this view is sought in the fact that in the vicinity of these collections are also often found small miliary tubercles.

The first reason would be conclusive; but certainly, in a large number of cases, the recognition of tubercles, as such, in the caseous foci, is utterly impossible. The presence of the tubercle-granulum in the vicinity of a cheesy deposit, the second reason urged, speaks as strongly for the non-tuberculous nature of the disease. The miliary eruption in this peripheral manner is noted in the most different pathological processes of various organs, without any claim being advanced for a tuberculous character of the primary centres of inflammation. In fact, the miliary tubercle, when thus appearing, may be regarded as quite accidental,—due to local infection.

There are further one or two points of interest in connection with this case. The kidney appears under the normal size; whereas, as a rule, in phthisis renalis the organ is enlarged, nodular, and presents a roughened surface; the capsule greatly thickened, as here. Further, the left organ is more frequently involved. Contrary to what has heretofore been supposed, the liver is much more frequently the seat of true tubercle than the kidney, the relative frequency being as two to one. While inclined to believe that such masses are simply inflammatory in their origin, and of the nature of cheesy deposits, he did not desire to maintain that true tubercles did not occur in the kidney, but that when present they were usually associated with general tuberculosis of the body. Then the organ may be found studded with numerous gray points, which are barely visible to the naked eye.



The causes of the inflammations just referred to are numerous, but they are usually seated in the genital apparatus, as the testicle, bladder, ureters, etc. The inflammatory products of chronic pyelitis and pyelonephritis are generally abscesses, yet the contents of these may become inspissated and thus be formed caseous foci.

Dr. Allen regretted that the ureters had not been examined, but the examination was necessarily very hasty. He desired to ask Dr. Bertolet whether these collections would not be included among tubercular deposits according to the old classification.

Dr. Bertolet replied that they would, just as we are still in the habit of speaking of laryngeal phthisis when referring to the chronic ulcerative inflammations of the glands of the larynx. This term is apt to be applied especially when the disease occurs in the course of pulmonary phthisis. Laryngeal tuberculosis could, however, only be spoken of when true tubercles existed in the mucous membrane of the larynx. The same holds good in case of the kidneys.

Multiple miliary abscesses in the kidneys, which follow in the course of certain septic diseases, especially puerperal processes, are often so numerous and small in size as to deceptively resemble an eruption of miliary tubercles. They are often dependent upon embolism, resulting from ulcerative malignant endocarditis of the left side of the heart.

Dr. John Ashhurst, Jr., said that no doubt the older pathologists would have looked upon the kidney shown by Dr. Allen as a specimen of tuberculous disease, just as they considered many affections of the bones and joints to be tuberculous, which were now regarded as simply the result of inflammation. Even the older writers, however, in some degree recognized the inflammatory origin of these cases; Rokitsky mentioning that one form of renal tubercle was known as *gonorrhæal* tubercle, on account of its occurrence as a sequel of blennorrhagic affections.

This condition of the kidney might also, as pointed out by Dr. Bertolet, be produced by embolism as the result of ulcerative endocarditis,—the “arterial pyæmia” of Dr. Wilks; and in this connection the views of Dr. Dickinson as to the pathology of the so-called “surgical kidney,” or, as that writer more appropriately proposed to term it, “uriseptic suppuration of the kidney,” should be remembered,—the state of the organ in these cases being described by Dr. D. as “one of pyæmia arising within itself.” And then, too, in discussing this question, it should not be forgotten that Burdon Sanderson and other modern pathologists had advanced strong reasons for regarding tuberculosis and pyæmia as themselves analogous if not allied conditions.

December 9th, 1875.

3. *Cirrhosis of kidneys from lead-poisoning.*

By DR. J. H. HUTCHINSON.

T. H., æt. 52, married, and a painter by occupation, was referred to me by Dr. Harlan, to whom he had applied for relief for a slowly-increasing defect of vision, which, upon examination, was found to depend upon retinal changes. He had been a perfectly healthy man until about two years ago, when he began to suffer from symptoms which were attributed by the physicians who attended him principally to disease of the heart, and by himself to some morbid condition of his liver. Upon examination, I found that there was enlargement of the heart and that the second sound was booming in character, suggesting the possibility of stiffening or even of ossification of the aortic valves,—a suspicion which was still further confirmed by the existence of calcareous masses in the radial arteries. The area of hepatic dulness seemed slightly increased, not more so, however, than could be very readily accounted for by congestion.

Without knowing of the results of the ophthalmoscopic examination, the patient's condition and symptoms suggested to me the possibility that he was suffering from Bright's disease. I therefore requested him to send me a sample of his urine; upon examining this I found it to be acid in reaction, of low specific gravity, and to contain a slight but appreciable amount of albumen. I further ascertained that the quantity passed in the twenty-four hours was large. Under the microscope a few granular casts were found. There was not at this time, nor subsequently, any dropsy. From this examination, taken in connection with the general symptoms, and the fact that he was a painter, I had no difficulty in arriving at the conclusion that he was affected with the cirrhotic form of Bright's disease.

The patient suffered principally during the last three months of his life from dyspnoea. This was very much increased on two occasions by intercurrent attacks of pleurisy; but it was always present, and seemed to be due in great measure to the circulation through the lungs of an imperfectly depurated blood. Just before the termination of the case pericarditis supervened, and this seems to have been the efficient cause of his death, by bringing about an almost complete suppression of his urine. While he was lying in a comatose condition, which preceded his death by forty-eight hours, his face was observed to be covered with a white powder, which looked as if it might have been dusted over him. A portion of

this was removed for microscopic examination, which showed that it was an amorphous powder. Upon treating it with nitric acid, crystals of nitrate of urea were distinctly recognized.

The *post-mortem* examination was made last Sunday, December 19th, about twenty hours after death, with the following results. Upon opening the chest a small amount of effusion was found upon the right side, together with other evidences of recent and old pleurisies. The lesions of recent pericarditis were also present. The heart was very much hypertrophied, the left ventricle was dilated, and its walls were pale in color and presented to the unaided eye a fatty appearance. A calcareous plate was found in each segment of the aortic valve. The kidneys were very much contracted, the right being only one-half the usual size. They were granular on the surface, and their capsules were separated from them with great difficulty. Under the microscope an excess of connective tissue was very perceptible, together with a small amount of free fat. The liver was apparently healthy.

December 23d, 1875.

4. *Pyelitis and cystitis.*

By DR. M. O'HARA.

I was called to see M. S., æt. 75, March 22d. She stated she had never been sick until about four weeks previously. Had vomiting, loathing of food, and constant urination. No sleep during night, in consequence of frequent urination. Was sitting up. In a day or two became weaker, quite sallow, as if from pyæmia, or chronic disease of the stomach and liver. Had two chills, and constant fever; became exhausted, and died on the 28th.

Post-mortem examination.—There was a hard mass about umbilicus, and below this a pyriform tumor. The hard mass was the right lobe of the liver, very much enlarged downwards, projecting in consequence of being raised by the bodies of the vertebræ behind. The tumor was the gall-bladder distended. The right lobe of liver extended one inch below the umbilicus, the gall-bladder full one and a quarter inch below that.

The left lobe extended downwards and to within two and a half inches of the left superior spinous process of ilium, and to the left as far as commencement of left lumbar region.

Length of liver, eight inches from above downwards.

Right lobe deeply congested, five inches broad.

Left lobe, six inches long and three inches thick.

Right kidney very large, considerably diseased; pelvis dilated with abscesses, probably from infarction.

Left kidney smaller; commencing abscesses and pyelitis; pelvis slightly dilated.

Intestines normal.

Bladder—coats very thick, filled with pus, exceedingly contracted; contains small concretions; mucous membrane disorganized. The bladder congested and softened in the interior.

The interest in this case centres on the vast amount of disease; and yet the patient stated she was healthy until a few weeks before death. She had a chill on February 22d, and one on February 25th, one on March 24th and 26th, and still the only complaint was of the vesical trouble.

April 13th, 1876.

5. *Kidneys from a case of lymphatic leukhæmia.*

By DR. FREDERICK P. HENRY.

On February 12th, a Swedish sailor, æt. 23, was admitted to one of the surgical wards of the Episcopal Hospital, suffering from retention of urine. It was immediately ascertained that the retention was a symptom of paraplegia, and the case was transferred to the medical side. There was partial loss of sensation and almost complete loss of motion in both lower extremities, great tympanitic distention and decided tenderness of the abdomen, and marked febrile movement. The paraplegia had occurred suddenly ten days before admission, and was quickly followed by incontinence of fæces and retention of urine. After admission there were several attacks of epistaxis.

It was evident, from the above-mentioned signs and symptoms, that the case was not one of simple paraplegia. The average morning temperature for nineteen days, from February 12th to February 29th, inclusive, was $101\frac{1}{4}^{\circ}$. The average evening temperature for the same period was $102\frac{1}{4}^{\circ}$. There were no marked remissions, and no intermissions. The average pulse and respiration were also greatly above the normal. Urine contained neither albumen nor casts. The man improved under treatment, as was evidenced by his appearance, increased power over the lower limbs and the bladder, and a reduction in the temperature and in the frequency of the pulse and respiration. On March 5th there was an attack of hæmaturia, which continued for about three days, and was completely recovered from. On March 13th there was another large discharge of blood from

the urethra, and about twenty-four hours after the man died from exhaustion.

At the *autopsy*, the abdominal cavity was first explored. The intestinal coils were very dry and pale, almost translucent. Mesenteric glands greatly enlarged. Intestinal mucous membrane, from the ileo-cæcal valve to the stomach, was perfectly healthy. Spleen slightly enlarged and more deeply colored than normal,—of a blackish-purple hue. The kidneys exhibited are seen to be enlarged to nearly twice the natural size. They are covered with numerous patches of a whitish medullary substance, slightly raised above the surface. The cut surface shows an almost general infiltration of this material through the whole organ, involving the pyramids as well as the cortex. The pelves and ureters are enormously dilated; in the fresh state the ureters, in appearance and size, resembled the intestine. There was no urethral stricture and no prostatic enlargement, the catheter being always passed with ease. A leukhæmic patch was observed upon the upper surface of the liver, which extended deeply into the substance of the gland. A firm, partly organized clot was found in the lumbar region of the cord outside of the dura mater.

The nature of the pathological process giving rise to the changes observed in these kidneys is, I think, not so simple as may appear at first sight, and on this point I should like to have the opinion of the Society. The question, I think, lies between the form of suppurative nephritis known as surgical kidney, and leukhæmic infiltration. In favor of the former view is the fact that there was retention of urine, which, by its backward pressure, has caused great dilatation of the ureters and pelves of both sides; while opposed to it is the fact that the uriniferous tubules preserve their epithelium, as will be seen in the section under the microscope, and as was observed by me in numerous other sections from the same organs. I see it stated in the works which I have consulted that the blocking of the tubules with epithelium is a prominent feature of this form of inflammation, especially when acute.

In favor of leukhæmic growth it may be mentioned that there was a well-marked leukhæmic tumor of the liver, that the case was one of leukhæmia, and that hemorrhage occurred from the kidney, since one view of lymphomatous tumors is that they originate in hemorrhagic extravasations. On the other hand, the cells composing the infiltration are not imbedded in the reticulum characteristic of the lymphomata.

I have not been able to trace the source of the hemorrhage, but it is certain that it did not have its origin in the Malpighian bodies. The other organs were sound, with the exception of the bladder, the cavity of

which is dilated and its mucous membrane catarrhal. The aortic valves were fenestrated.

Dr. James Tyson was inclined to believe the softened points in the kidney were not of leukhæmic origin, but rather the result of a parenchymatous nephritis induced by the obstruction in the ureter. For, in the first place, this condition, and its consequent pelvic pyelitis, are common causes of abscess of the kidney; and in the second, it would seem as though the leukhæmic condition undoubtedly present was scarcely intense enough to involve the kidney and leave intact the spleen, which is much more commonly involved in leukhæmia.

Dr. Henry desired to know the probability of the marrow of the bones being involved in these cases. He had made no minute study of the medulla, but he could, in an ordinary naked-eye examination, discover no change in either the red or yellow marrow.

Dr. Tyson said the leukhæmic changes in the medulla of bone consisted chiefly in a return of the marrow to its embryonic condition, the normal adipose cells being substituted by immense numbers of leucocytes, the effect of which is to remove the red hue of the red marrow, and produced a white appearance, even that of pus; so that the retention of the red color was evidence against any such change, although nothing short of microscopic examination could determine the question accurately.

April 27th, 1876.

b. FEMALE ORGANS OF GENERATION.

6. *Fluid from cyst of the broad ligament.*

By DR. H. LENOX HODGE.

On Wednesday, September 8th, Dr. H. removed from a patient of Dr. Dare, of Shiloh, N. J., eight quarts of a thin, clear fluid, with a delicate straw tint, by tapping. Its specific gravity is 1007, and it contains no albumen.

This specimen possesses a peculiar interest because of its delicate straw color. The fluid which is considered characteristic of that from a cyst of the broad ligament is perfectly colorless. This is an exception to the usual rule, or else belongs to some other structure.

The facts in favor of its being from a cyst of the broad ligament are—1, the thinness of the fluid; 2, the clearness of the fluid; 3, the low specific gravity; 4, absence of albumen; 5, no sac could be felt through the abdominal walls after tapping; 6, the incurvation of the abdominal

walls after tapping was very marked; the patient was tapped a year ago, and Dr. H. removed ten quarts of fluid perfectly colorless like spring-water, and possessing all the other characteristics of fluid from cyst of the broad ligament.

Dr. Pepper inquired of Dr. Hodge whether the fluid was often reproduced in these cases after tapping.

Dr. Hodge replied that it was the exception rather than the rule that this should occur, but he had met it in two cases. One was the present, and another was a case tapped by Dr. Atlee several years ago, which subsequently came under the notice of Dr. Goodell and himself, when the fluid was found to have reaccumulated. But, judging from the results in a large number of observations, a tapping may almost be counted a cure. In the present instance the patient had asked him to perform ovariectomy, but he had declined.

Dr. Pepper referred to Mr. Keith's report of his last fifty cases of ovariectomy, among which are included several cases of cyst of the broad ligament which were cured by tapping.

Dr. Hodge said that Mr. Keith, in this last report of fifty cases of ovariectomy, stated that since 1872 he had been able to cure by a single tapping four cases of cyst of the broad ligament, which tumors would, some time ago, probably, have been removed by operation. The distinction between cysts of the broad ligament and ovarian cysts, and the great tendency of the former to be cured by a single tapping, had been, he believed, earnestly pointed out by Drs. Atlee and Peaslee, of this country, before it was recognized abroad.

September 9th, 1875.

7. *Multilocular ovarian tumor.*

By DR. ELLIOTT RICHARDSON.

The patient (Mrs. M.) from whom this tumor was removed was about 50 years of age. She had been married at 15 years of age, and her husband survives her, but during the period of about thirty-five years of married life she had never been pregnant. Her menstrual functions were, however, regularly performed until she reached the age of 40 years, when they ceased. Though always an active person, for many years she had complained of poor health, but had never during adult life had a severe attack of illness. No hereditary tendency to disease could be found, but this was rather due to ignorance of her family record than to any positive evidence.

In early married life she is said to have had venereal disease, but of what form could not be ascertained.

Early in January, 1875, nine years after the cessation of her menses, she was seized with a copious hemorrhage from the vagina, which did not, however, continue long, and after its cessation she noticed for the first time a tumor in the lower part of the abdomen, to the right of the median line. The tumor at that time is described as not being of large size. She soon after put herself under medical observation, and during the following eight or nine months consulted several physicians. During this time the tumor continued to grow, and its growth was accompanied by pain in the back and loins and other distressing symptoms due to its presence, but the hemorrhage did not return.

In September of last year she had the operation of paracentesis abdominis performed, which gave her much temporary relief. In the following November I first saw her. She was then in poor general health, was thin, and badly nourished. Her abdomen was greatly distended, and in consequence there was great dyspnoea, and about the back and abdomen considerable pain of a dull character. Examination of the abdomen by palpation plainly showed the existence of fluid in the peritoneal cavity. Vaginal examination disclosed the presence of a large tumor almost entirely closing the superior strait of the pelvis, with the os uteri elevated, almost in the median line; it and the uterus were firmly fixed and immovable. After her refusal to go to a hospital for the purpose of undergoing an operation for radical cure, or to have any operation for the removal of the tumor performed, I decided to tap the abdomen. This was done by means of a trocar and canula, on the 12th of November, and nearly a wooden house-bucketful of perfectly clear serous fluid was drawn off.

The tumor was now plainly discernible, and was found to extend to or a little above the umbilicus. The operation gave great relief.

From this time I lost sight of my patient until March 6th of the present year, when I was called upon to see her again. I found her much emaciated, and general health very poor. Since the last tapping she had relieved the serous accumulation in the peritoneal cavity by puncturing the attenuated tissues at the umbilicus with a needle, and for several weeks had allowed the serum to ooze from this small opening. I found the umbilicus the seat of an ulcer of considerable size, the result of this irritation and attrition of the clothing.

As the abdominal accumulation was again large, at the patient's request I again punctured the abdominal cavity, and again drew off a wooden bucketful of fluid. This time the fluid was at first yellow and limpid,

but towards the last became discolored with blood. I saw her on the following day, when I found her much more comfortable, though weaker, probably from the loss of blood on the preceding day. Twelve days afterwards (March 19th) I was sent for to see the patient again, when I found her extremely prostrated with pain of considerable severity, chiefly on the left side of abdomen and in the back; her pulse was small and frequent; surface of body and extremities cold, and occasional vomiting; the patient being able to take but little food, and that in small quantities frequently repeated. Her lower extremities were very œdematous. I saw her daily from this time until the day of her death, April 6th. The vomiting increased until no food could be retained on the stomach, and nutritive, stimulating, and anodyne enemata supported life and relieved in a measure her distressing symptoms. During the last two days profuse diarrhœa came on and terminated her existence.

Post-mortem examination, sixteen hours after death.—The surface of the abdomen on the right side was much discolored, being of a livid color, due to the pressure and irritation of the clothing during the last few days of the patient's life. An incision in the median line was made through the abdominal walls, which were found to be very thin and almost free from fat.

The peritoneal cavity was found to contain over a bucketful of a muddy, light-colored fluid, and an immense quantity of coagulated lymph adhering to all the serous surfaces, the result of a general peritonitis. The tumor (a large multilocular ovarian) was found adherent in front to the bladder, and low down to the abdominal walls anteriorly, behind to the intestines and the uterus. It seemed to have originated from the right ovary, and was found to consist of numerous cysts of different sizes, containing fluids of different density and color, as is usually the case in such growths; the contents of some of the cavities being of a gelatinous character; others containing a dark-brown, limpid fluid, etc. One of the cysts, occupying apparently the summit of the tumor and of large size, was found ruptured, and its contents escaping into the peritoneal cavity had evidently given rise to the general peritonitis.

Exactly when this sac had ruptured I cannot say, but I do not think that the peritonitis could have become general until several days after the last tapping.

No other parts of the body were carefully examined.

April 13th, 1876.

8. *Extra-uterine pregnancy in the beginning of the second month; death from hemorrhage.*

By DR. W. G. PARKS, for DR. L. GRUEL.

Mrs. M. M., 25 years of age, was the mother of seven children. Six of them died in the first months; the living one is now nineteen weeks old. Except in confinement she had never been sick before. Four weeks ago, during menstruation, she was weaker than usual, and menstruated for two days only; there were cramps, a kind of colic; no medical attendance was required.

On the 22d instant, instead of the regular return of menstruation, there appeared violent, gradually increasing cramps; medical attendance was called three hours after the first pain, and, four hours later, she died.

Autopsy, twenty-two hours after death.—All the abdominal organs were markedly anæmic. The pelvis was full of blood in large clots; on the *right horn of the fundus uteri* was a *rupture* of about two lines in diameter; a small cyst on the right ovary.

The inside of the womb was anæmic; on the right uterine aperture of the Fallopian tube, imbedded in the tissue of the fundus, was a sac filled with a clot as large as a cherry, and on its superficies the ruptured place. The ovum was lost in the clot filling up the pelvis.

Only the opening of the abdomen was permitted. *May 25th, 1876.*

C. CALCULUS.

9. *Calculus of unusual size passed by the urethra.*

By DR. JAMES TYSON.

The gentleman from whom passed this calculus is perhaps 40 years of age. He had his first attack of nephritic colic in January, 1869, another, very severe, in July, and sharp attacks, lasting from one to many hours, almost weekly during the fall of the same year. In the first two he was attended by physicians, in the subsequent ones he treated himself by hot applications and baths. Some time during this period he passed a small stone through the urethra. At the close of 1869 or beginning of 1870, after this series of attacks ceased, he first became unable to sleep through the night without rising to evacuate his bladder. Some time after this,

also (the exact date he cannot locate), he began to experience a stinging sensation during micturition, together with a frequent desire to pass water during the day.

In the early spring of 1872, I attended him for the first time in an attack of nephritic colic. An examination of the urine at this time revealed neither pus nor an undue quantity of mucus. Similar but slighter attacks occurred during the fall of the same year, but no calculus was then known to have passed through the urethra.

In January, 1874, he consulted me for the symptoms of stinging urethral pain and frequent disposition to pass water, which had gradually increased during the year previous, so as to have become very annoying. An examination of the urine at that date revealed an alkaline reaction which was probably secondary, a sp. gr. of 1018, and a moderate deposit, which was opaque, white, and shown by the microscope to be made up of pus, red blood-disks, crystals of the triple phosphate, with amorphous phosphate of lime. The urine was also albuminous, depositing about one-tenth its bulk by the heat and acid test. Numerous other examinations resulted similarly, and it was found that the urine at the moment of secretion was acid, but rapidly became alkaline in consequence of the large amount of organic matter present. The presence of a quantity of blood so small as to be detected only by the microscope, and again so large as to be evident to the naked eye, was constant. Of course, when the urine happened to be alkaline, there was added the dirty-hued glairy mass usually present under these circumstances.

On exploring the bladder with the sound, which was done on more than one occasion, it was found exquisitely tender, but no stone was detected.

At different times during the year he was treated by tannic acid, benzoic acid, and other remedies, and his bladder was washed out daily, at times with tepid water and at others with weak acid solutions. Perhaps through the latter means, which the patient practised faithfully himself, the symptoms of irritation of the bladder diminished; his days were quite comfortable, and he was compelled to rise only once during the night. His urine remained, however, unchanged.

About the 1st of March, 1875, the patient fell into a febrile state, characterized by a frequent pulse, warm and dry skin, with dryish tongue, and a feeling of great weakness. These symptoms, when not controlled by remedies, were almost constant for about two months, and resulted in an appreciable loss of flesh. He was not under my treatment at the time, but from what I learned of his symptoms I felt misgivings that the con-

clusion I had come to with regard to his case—that there was a cystitis, and the cause of the purulent urine was wholly confined to the bladder—was not correct, and that there might be an impacted calculus in the pelvis of the kidney which caused the pus and the fever-symptoms, not unlike those of typhoid, from which he suffered. About the 1st of May, however, they abated, and his general health began to be restored. For two or three days previous to May 15th there was the most intense irritation of the bladder. The desire to pass urine was constant, while the obstruction was complete, necessitating the use of the catheter with which the patient always relieved himself. About one o'clock P.M. of the 15th, he sent for me, stating that he believed he was passing a calculus, that it was apparently lodged in the perineum. By the time I reached him, three hours later, the calculus exhibited had passed, followed by a hæmaturia which gradually diminished. On May 21st, the urine six hours after passing was still phosphatic, contained a few blood-corpuscles, and was albuminous, containing one-fourth its bulk of albumen.

The calculus, before bisected, was nearly an inch long and half an inch wide, and phosphatic in composition. Since it was passed, Mr. Y. has enjoyed excellent health, and writes me on June 20th of this year, "I have no symptoms except such as may be revealed by the appearance of urine. I am not annoyed by frequent desire to micturate. In a sleep of eight hours I have to get up once. Occasionally, when very tired, I have slept the entire night." A specimen of his urine accompanying this note was faintly alkaline, contained an evident opaque white sediment, which proved to be pus on examination with the microscope, while the application of the usual tests precipitated a small quantity of albumen. Some cystitis, therefore, remains; whether it will ever disappear is uncertain. He has been under no treatment whatever since he passed the stone.

I believe the direct cause of the passage of the calculus was the constant catheterization for the purpose of washing out the bladder. Soft catheters were used, and of the largest size, so that finally the patient remarked that he had so dilated his urethra that he could scarcely retain his water.

The question of the date of the entrance of the stone into the bladder is an interesting one. There are two occasions on which this might have occurred. First, at the termination of the first series of attacks, late in 1869. Second, during the attacks in 1872, when I first attended him. The symptoms of irritation of the bladder date as far back as the beginning of 1870, although there was no evidence of organic change in the bladder in the spring of 1872. These changes were, however, evident in January, 1874. There was no examination of the urine in the interval,

although the symptoms of irritation of the bladder continued, and *some* cause must have produced them. If it was the stone, then another must have passed in 1872, have been voided without the knowledge of the patient, or still remain in the bladder. The latter is not likely; or there would not be the total abatement of symptoms. On the other hand, if we suppose the stone to have passed into the bladder at the end of the first series of attacks in 1869, then two stones must have come down at this period; for we have the history of one recovered at that date. On the whole, therefore, I am inclined to think this calculus entered the bladder at the end of the attack in March, 1872; although this would leave the symptoms of bladder-irritation between 1870 and 1872 unaccounted for. But as the conditions of the urine in 1872 pointed to no organic change in the bladder, and such change was developed between the attacks in 1872 and 1874, this view seems to me the more likely one. It must perhaps forever remain a matter of probability. *June 22d, 1876.*

d. MAMMARY GLAND.

10. *Case of cystic adenoma of the mammary gland.*

By DR. C. B. NANCREDE.

M. B., æt. 40 years, widow, having borne children, came to the Episcopal Hospital, January 10th, 1876, complaining of a growth in her left breast, which caused her uneasiness. She stated that after one of her pregnancies this breast had gathered, and was permitted to evacuate itself. She some years back suffered from metrorrhagia, and again from scanty menstruation. Between two and three years ago she noticed a tumor, as she said, in her right breast, which disappeared after friction with ointments, etc., so she tried the same plan with this present growth, but with no result. She was unaware of its existence until three weeks before consulting me, when she discovered it, the growth then being about as large as when I saw it. She complained of sharp lancinating pains, extending from the tumor into the other breast, and it was tender to handle.

When first seen by me there was considerable œdema from the constant handling, rubbing, etc., which, with some of the tenderness, disappeared after two weeks' abstinence from any local treatment or manipulation. The growth felt about as large as a hen's egg, was ovoid, hard, and freely movable beneath the skin and over the pectoral muscle. The axillary

glands were free from any enlargement or tenderness, and there was no retraction of the nipple. She passed from my hands into those of Dr. J. Ashhurst, Jr., by whose kindness I am enabled to present this specimen. Dr. Ashhurst on Thursday, January 10th, 1876, removed the tumor with the whole gland as a precautionary measure. The accompanying drawing, made from a section of the tumor, exhibits its structure.

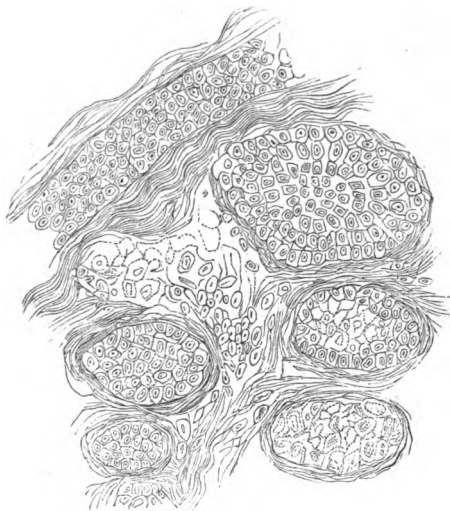


Fig. 1.

Out from tumor showing tubules in transverse and longitudinal section, filled with proliferated epithelium, to the exclusion of a lumen.

This case seems to me of interest clinically, and still more pathologically. Clinically, because it presented nothing by which it could be distinguished from a solid growth, and also because it might so readily have been mistaken for a scirrhus-nodule not yet adherent to the surrounding parts. The chief diagnostic points against any such view were the history both of this and the previous growth in the other breast, the absence of the extreme stony hardness of scirrhus, and the previous menstrual troubles. Of course, the absence of retraction of the nipple, dimpling of the skin, and involvement of the axillary glands could be of little value, since if the growth really were of only three weeks' standing all these might have been absent, and yet scirrhus present. The probabilities are that it had existed for a much longer time, as such growths are generally very chronic in their course, although occasionally very rapidly enlarging. Pathologic-

ally this growth seems to give us the key for the explanation of the varied and strange appearances presented by the so-called "chronic mammary tumor" of Sir Astley Cooper, or cystic adenoma, as more ordinarily described.

Let me here briefly advert to the varieties of benign cystic growths having for their seat the mammary gland.

First, there will be frequently found numerous cysts either on the surface, beneath, or in the substance of the mammary gland, which, although presenting many varied appearances, are really of identical origin; they are due to disease of the ducts. In their simplest form they are usually found scattered over the posterior surface of the gland, and, although rarely amounting to anything like an important disease, their occurrence indicates a certain morbid condition. As they may be regarded as typical of this class of mammary cysts, their description will answer for all the other larger and more complicated ones. These cysts vary much in size, are generally small, however, and have for contents fluids of a mucous nature, varying in color from a light yellow to black or a dirty green. Under the microscope these present a granular basis, fat-globules, milk-globules, and colostrum corpuscles with epithelium. They are constantly lined with a coherent epithelium formed of oval, slightly granular, nucleated cells. I would here refer to the admirable essay of Mr. Birkett on "Diseases of the Breast," from which I have drawn many of the facts offered for your consideration this evening.

These cyst-contents would seem to clearly prove their origin, since they contain all the results of the secretion from the true gland. Another proof which Mr. Birkett considers as conclusive, is the fact that we not uncommonly find in the breasts of middle-aged women the ducts dilated and filled with this same greenish mucous fluid, which, in like manner, presents structures identical with those found in the cysts. The mode of formation of these cysts as well as of the larger ones can be explained in a few words. An obstruction occurs at some point of one of the lactiferous ducts. Secretion still going on behind the obstruction, the duct-walls soon dilate, causing detached enlargements or a varicose condition.

In time the portions of duct between the enlargements contract, until finally all trace of it becomes obliterated, and smaller or larger cysts are found surrounded by condensed cellular tissue. At this latter stage the cyst-contents have generally become more solid; but, whatever the condition of cyst or contents, more or less distinct traces of the ducts may be obtained on section.

There is another disease that might be taken for these cysts, but it is

rather *cystiform* than *cystic*, since in the latter we have a closed cavity lined by a continuous membrane, while in the former a communication with the ducts opening on the nipple can always be demonstrated. This affection seems to be due to a varicose condition of the ducts, caused by malformation of the nipple, or their obstruction by pressure. In addition to the substances found in the true cyst, there is seen a firm coherent mass, which may be removed entire, after maceration, presenting a complete cast of the dilated duct and its ramifications. This mass consists of fat-globules, epithelial scales, and some spindle-shaped bodies.

The mode of formation of this pseudo-tissue and the cyst-like bodies would seem to be as follows. First, an excess of secretion takes place in the duct, which cannot flow away spontaneously, owing to the malformed nipple or from pressure on the ducts. The fluid parts becoming absorbed, the more solid portions remain, leaving a more or less hard mass. From mechanical pressure this sets up irritation, followed by cell-proliferation, which sooner or later attains a certain degree of fibrillation. One of the most important facts relating to this cystiform affection is that they are not uncommonly found in portions of gland-tissue removed with a nodule of scirrhus or medullary carcinoma, and that therefore we should be on our guard not to consider the growth innocent until we have carefully examined whether there may not be some small isolated portion of a malignant nature.

The last class of benign mammary cysts now remains to be considered. These are due not to a diseased duct, but to a peculiar action of the fibro-cellular envelope of the gland-tissue, the consequence of morbid nutrition. Owing to this we have fluid effused into the cellular tissue which sooner or later assumes a cystic character by its accumulation at one spot, and by the condensation of areolar tissue around forming a cyst-wall. The cells of the epithelium lining these cysts are hexagonal and nucleated. They are characteristic of this form, and isolate it from all other mammary cysts. These cysts may remain without other than fluid contents, but, as a rule, from the side towards the gland a solid mass will be observed, which in time tends to fill up the whole of the cavity. When this point has been reached, the growth still continuing, the limiting wall gives way, new cysts are formed, until we may have a very large mass, which has been called by various authors "chronic mammary tumor," "sero-cystic sarcoma," etc. I think that you will agree with me that my specimen falls within this latter division.

Now as to the microscopic appearances. According to Rindfleisch, "with the total emancipation from the physiological purpose of the gland-

dular formation, the sphere of those tumors begins which I call adenomas." This is shown by several of their microscopic appearances. Apart from the stroma an adenoma consists of epithelial cells arranged concentrically, as if around a lumen. As a rule, this lumen exists only at spots, or, occluded by a mucous or colloid mass, does not communicate with the excretory ducts of the gland. It seems as if nature's effort was merely to produce the greatest possible amount of something resembling glandular tissue, but neglects the vascular supply, so that the larger the growth becomes, the less, relatively, is the supply of blood, the excessive growth thus causing its own death. The mode of growth of an adenoma is *central*, not *peripheral*, so that it displaces more than it infiltrates. The first microscopic change to be noted is a proliferation of the epithelial elements of the acinus. This differs from that taking place physiologically during lactation, in that the cells are piled up one above another, and that a regular fatty metamorphosis does not occur. The proliferation of the cells commences close to the connective-tissue limits, which crowd in among the bases of the older cells until finally the lumen is filled up, when a steadily increasing dilatation of the whole acinus takes place. The remainder of the gland is apt to become atrophic. After the complete filling of the acini by cell proliferation, the adjacent cell-nests coalesce more and more, fatty degeneration occurs at the centre of the large ones, and finally so-called atheroma-cysts are formed. This is all that concerns us microscopically.

As Rindfleisch, Billroth, and Von Bunn remark, all these appearances should cause this growth to be classed among the epitheliomata, only differing (so far as our present knowledge goes) from cancrioids by respecting to a greater extent the connective-tissue limits. We have the same return to the foetal state of solid masses of cells which precedes the formation of the central lumen of glands. In the growth itself, even the limits between epithelium and connective tissue are not respected, since the neighboring acini coalesce by destruction of their connective-tissue capsules. It remains for further investigators to prove whether the growth as a whole may not break through its capsule and so infiltrate the surrounding parts.

Indeed, Billroth and Von Bunn have termed the adenoma mammæ "true epithelial glandular carcinoma;" and Rindfleisch seems inclined to agree with them. I would, in conclusion, say that Rindfleisch considers a true adenoma mammæ very rare, and that Billroth seems to think that almost invariably they are really adeno-sarcomas. If by an adeno-sarcoma he means an adeno-fibroma (for Rindfleisch considers the fibromas as really

fibrous sarcomas), I can understand it. Otherwise there is nothing in the present specimen to confirm this view. The contents of the cyst resemble thin curdled milk, but under the microscope presented numbers of more or less fatty, degenerated, oval, nucleated cells, few oil-globules, and no milk-globules.

Dr. John Ashhurst, Jr., spoke of the comparative rarity of this form of mammary tumor, and referred to a specimen which had been exhibited to the Society a number of years ago, but no account of which was to be found in the published proceedings. The specimen in question exhibited an earlier stage of the pathological process concerned in the formation of these tumors, being an example of the "sero-cystic sarcoma" of Sir Benjamin Brodie, a tumor which had been better classified by Sir James Paget as a "glandular proliferous cyst." It was removed from a middle-aged woman who had been for a short time a patient in the Episcopal Hospital, where Dr. A. had had the opportunity of studying her case, but who had at that time declined an operation, and had subsequently entered the Pennsylvania Hospital, where her breast was removed by Dr. William Hunt, the specimen being exhibited to the Pathological Society by one of the resident physicians, whose name Dr. A. could not now recall. In that case the cysts were quite large, some being so near the surface of the body as to give the part a characteristically semi-translucent, bluish-black appearance, and there was a free discharge of cystic fluid from the nipple. In the specimen shown to-night, the intra-cystic growths were so far advanced as to render the tumors an example of the "chronic mammary tumor" of Sir Astley Cooper, or, as Mr. Birkett (to whom was in great degree due our knowledge of the pathological relationship existing between these varieties of tumor) had more accurately proposed to call it, an adenocoele or adenoma.

These growths, Dr. A. added, were entirely innocent, though in both their earlier and their later stages they had often been mistaken for malignant tumors; and, indeed, when so far advanced that the intra-cystic growths, having burst the cyst-walls and caused ulceration of the skin, protruded as fungous masses, it might be impossible to make the diagnosis without the aid of the microscope. No doubt many cases in which it had been claimed that a return of cancer after operation had been prevented by internal treatment, were really cases not of cancer but of ulcerated adenoma.

Dr. Pepper said he recalled the case very distinctly, and thought perhaps he could supply the history Dr. Ashhurst desired from notes he had preserved, he having been much interested in the case at the time. He

recalled the slightly sanguineous discharge upon which the diagnosis was made, as well as the remarks which Dr. Ashhurst made at the time of its exhibition.

January 27th, 1876.

11. *Unusual form of scirrhus of the mammary region.*

By DR. JOHN ASHHURST, JR.

This tumor was removed from a woman, 66 years of age, on August 5th, 1875. The growth occupied the outer portion of the left mammary region, but did not seem to be directly connected with the gland. The central portion of the tumor presented a peculiar, glazed, papillary appearance, resembling prominent granulations, except in that the cuticle appeared to be unbroken. The patient had been aware of the existence of the tumor for about six months, and averred that she had a similar growth removed by means of caustics some years before, though she bore no cicatrix to substantiate the statement. The mass was removed by excision, and, as a precautionary measure, it was thought prudent to take away with the tumor the adjacent lobe of the mammary gland. The patient made a good recovery.

Dr. Bertolet was kind enough to make a microscopic examination of the specimen, and, on September 9th, 1875, wrote as follows:—"The mammary tumor must be classed as a carcinoma simplex (scirrhus). It presents a preponderating connective-tissue stroma, with irregularly-shaped epithelioid cells in its meshes. The contents of many of the alveoli are far advanced in the stages of fatty metamorphosis. No cancerous elements were detected in the adjacent lobe of the mammary gland; but there is evidently a slight hypertrophy of the connective tissue."

February 10th, 1876.

12. *Serous cyst of the breast.*

By DR. JOHN ASHHURST, JR.

The patient was a lady between 30 and 35 years of age, who was placed under my care by Dr. Stokes, of Moorestown, N. J. She had been aware of the presence of the tumor for about six months, and, though assured of its non-malignant character, was anxious for its removal, as, though not painful, it gave her a sickening sensation when touched. The tumor occupied the inner portion of the left breast, and was about the size of an English walnut, very tense and freely movable, rolling about under the

finger like a marble. Excision was performed on March 27th, a single incision being made in a line radiating from the nipple, which was not encroached upon. The tumor and the adjacent lobe of the gland were removed, several small cysts being discovered in addition to that which formed the growth, which had been recognized before the operation. The specimen furnishes a good example of the simple hygroma or serous cyst of the breast, a growth which should not be confounded with the *sero-cystic sarcoma* of Sir Benjamin C. Brodie, which is a proliferous cyst with intracystic growth and probably an early stage of one form of the adenoid or chronic mammary tumor.

April 13th, 1876.

VI.—THE NERVOUS SYSTEM.

1. *Glioma in left lobe of cerebellum : headache, staggering gait, excessive vomiting.*

By DR. WILLIAM PEPPER.

Miss W., æt. 20, enjoyed general good health until the latter part of 1874. She had, for about a year before that, been noticed by her friends to hold her head towards the right side. In March, 1875, vomiting began, and continued, with occasional intermission, until her death, on October 12th. The vomiting was peculiar; it was not influenced by the character of the food; it frequently occurred early in the morning, when she first moved in bed; frequently recurred as often as eight, twelve, or even more times in the course of the twenty-four hours. There was no pain in the stomach, though later there was circumscribed tenderness in the epigastrium. The matters vomited consisted of food, more or less altered, or of acid fluid. During menstruation, in September, repeated and free vomiting of blood occurred, while at the same time the menstrual discharge was checked. On other occasions a few drops of blood were observed in the matters vomited, but these probably came from the throat or from her gums, which were disposed to bleed. There was no constipation.

In April she began to complain of headache, recurring in severe paroxysms several times a day. She described it as being deep-seated, at the vertex or temples, and extending down over the left eye. It was at one time absent entirely for seven weeks. She was also noticed to stagger slightly in her gait, especially on first rising after being seated for some time. On one or two occasions she complained of difficulty in walking, saying that she tired easily, and could only walk slowly, and not as she had formerly been able to do. Her eyes were naturally prominent: after the early spring of 1875 her eyes were occasionally sensitive to light, and soon grew dim on using them. On several occasions transient diplopia was observed; but her vision remained quite good until the close, so that she could read small type for a little while, or see small objects even at some distance. When lying in bed on her right side, the eyes turned to the right. No ophthalmoscopic examination was made.

She was confined to bed for the greater part of the time, and lay continually on the right side. Emaciation progressed with moderate rapidity. She became very prostrate, and died October 12th. Her mind remained perfectly clear, and memory good until the close.

Post-mortem examination, thirty-five hours after death.

Head.—No change in bones. Dura mater healthy. Hemispheres seemed healthy. No effusion at base; indeed, there was remarkably little effusion, as increased tension caused its withdrawal. On cutting tentorium and turning cerebellum out from its fossæ (after severing spinal cord), an oval tumor, one and a half by one inch, rolled out from the side of the left lobe of cerebellum. It was pinkish-gray, soft and fleshy in appearance. The dura mater was smooth and healthy in appearance where it lay; it had no adhesions. It lay in a cup-shaped cavity hollowed out of the substance of the cerebellum, and was merely attached and covered by most delicate cellular tissue.

There were no evidences of direct pressure on pneumogastrics, though of course there must have been greatly-increased tension and much irritation.

Rest of cerebellum apparently healthy.

Thorax.—Heart healthy; no pleural effusion. Right lung adherent quite closely. Hypostatic congestion postero-inferiorly. A small cretaceous nodule in right upper lobe, one inch deep in tissue.

Abdomen.—Fair amount of fat in abdominal walls. No peritonitis.

Stomach contained several ounces of slate-colored fluid. No ulcer. Extreme congestion, especially towards cardiac orifice, where it was very fine; injection of minutest capillaries. Some mammillation of the mucous membrane towards pyloric orifice. In a few places mucous membrane looked as though there had been hemorrhagic erosion which had healed. No thickening of its walls; no obstruction of its outlets.

Intestines.—Colon much distended with gas and fæces. Ileum extremely contracted. No enlargement of abdominal glands. The other abdominal viscera healthy. Uterus healthy. Ovaries contain recent corpus luteum.

October 14th, 1875.

The tumor was referred to the *Committee on Morbid Growths*, which reported, November 11th, 1875.

Report of the Committee on Morbid Growths:

"Your committee have examined Dr. Pepper's tumor of the cerebellum, and pronounce it to be a *glioma*.

"Microscopically, the growth is composed of numberless cells, whose physiological type is found in the neuroglia. In general they are round or oval, and send out delicate fibrillæ in every direction. These processes or fibrillæ are of strikingly dark contour, often slightly wavy and sharply bent. The cells are about thrice the size of colorless blood-corpuscles; they are nearly throughout multinuclear; usually they contain two large, round, or slightly oval nuclei in close apposition, each of these again enclosing two or more nucleoli. The body of the cell is homogeneous, faintly shining, yellowish.



Fig. 2.

"The peculiarity of these cells lies in the fact that they are not limited by any membrane, but, on the contrary, send out from their entire periphery fine fibrillæ. These small round cells with thin long processes radiating out in every direction, give them, when isolated by careful teasing, a spider-like appearance, the 'Spinnenzellen' of the Germans.

"Whilst still in their position, the extension of these processes from the protoplasm of the cells is almost impossible of recognition, and very apt to be mistaken for intercellular substance, but in reality there is no intermediate matter between the cells. Not unfrequently these long, fine fibrillæ are attached to the body of the gliomatous cell by homogeneous pedicles, as represented in the accompanying drawing."

2. Regeneration of human nerves after excision.

By DR. R. M. BERTOLET.

The portions of reproduced nerve exhibited were derived from the musculo-spiral and the radial. They both exhibited the button-like, cicatricial neuromes, the central swelling in both specimens being markedly greater than that of the distal end. The intermediate portion, *i.e.*, the regenerated part, of the nerve measures over an inch in the former, and nearly two inches in the latter specimen; in both cases it presents us with medullated nerve-sheaths and sharply defined axis-cylinders, and is indistinguishable, microscopically, from a perfectly normal nerve, thus showing how complete the reparation has been. The musculo-spiral was primarily excised several years ago by Giuseppe Sapolini, and recently again under the direction of Dr. S. Weir Mitchell. The radial was Dr. H. Lenox Hodge's case, who, being present, would, no doubt, be kind enough to furnish the Society with its history. These specimens were simply presented to the Society on account of their great rarity. They will be made the subject of a paper for publication elsewhere.

Dr. Hodge said, "On December 5th, 1874, I removed about two inches of the radial nerve on the back of the fore-arm, after it comes out from under the tendon of the supinator longus. The operation was done on account of long-continued and persistent pain in the back of the hand, accompanied at times with great redness and swelling. The patient was fifteen years of age. After the operation she was perfectly free from pain, and had no sensation in that part when touched. In about six weeks the pain gradually began to return; a few weeks later the tactile sensation also returned. The pain grew worse, and became as severe as at any time before the operation. Nothing gave relief, although every means were employed. As the tactile sensation had returned, as well as the pain, it was evident that the nerve had reunited, and that the pain was not merely subjective and referred to the old part. Therefore, on October 20th, 1875, I repeated the operation, and found the nerve, as expected, reunited, with the bulbs of reparation as described by Dr. Bertolet. The distance between these bulbs was one inch and a quarter. At this last operation, I removed three inches of the nerve and turned back the ends of the distal extremity so as to form a loop, and thus endeavored to prevent another restoration of the nerve. This operation as well as the preceding was done entirely outside of the deep fascia, and therefore no motor fila-

ments were removed, and no power or motion of the hand or fingers is wanting; nothing is lost but sensation. *November 11th, 1875.*

3. *Punctured wound of the brain.*

By DR. W. S. WOLFORD, for DR. WASHINGTON H. BAKER, who furnished the history.

M. W., æt. 22 years, single, butcher, large and stoutly built, was brought to the German Hospital, at 1.30 A.M., November 14th, 1875.

When brought in, he was insensible; pupils contracted. The muscles were not in a relaxed condition. Fæces and urine found in clothes; vomited matter on clothing. Lived until 8.30 A.M., November 17th, 1875. Never became conscious. There was no retention of urine. He had fecal discharges three times the first day, but none afterwards. He vomited twice after admission, when raised in bed to remove clothing, not afterwards. For some hours before death, a large quantity of mucus collected in his throat, and after six o'clock of the morning of death, he could not swallow his medicine.

On admission, a piece of steel projected out of a wound in the right parietal region about one-fourth of an inch; it was removed by the exertion of great force. It was a knife-blade, five and three-fourths inches long, half an inch wide, and an eighth of an inch in thickness. A little blood followed its extraction. The treatment consisted in cool applications to head, warmth to extremities for some hours, and carbonate of ammonium with whisky, carefully administered until reaction, after which time bromide of potassium and small doses of tartar emetic were given.

Temperature when admitted to hospital, November 14th, 1.55 A.M., was 95.6°; 7.30 P.M., 101.7°. November 15th, 3.45 A.M., 99°; 10.15 P.M., 103.2°. November 16th, 12.10 A.M., 102°, gradually increasing to 105.2° on November 17th, at 8.30 A.M., when death occurred.

Dr. Allen referred to an almost identical case which occurred in the Philadelphia Hospital, that of a negro. There was no suspicion of anything of the kind; but at the *post-mortem* examination the blade of a case-knife was found in the skull, evidently broken off after it had penetrated the brain-case.

December 9th, 1875.

4. *Pachymeningitis hæmorrhagica chronica.*

By DR. J. C. WILSON.

The brain and its membranes are exhibited. They were removed from the body of a German, æt. 58 years, who died in the Philadelphia Hospital. Death occurred shortly after admission. The following facts were elicited from the attendants. His left pupil was contracted, his gait staggering and straddling, with a tendency to reel towards the left; the head was carried forward, the arms out from the body; mental processes feeble; appetite voracious. He ran to the table and ate rapidly and greedily, like an animal. Speech not affected. No pain in the head was complained of, but he spoke of pains in his back. He crawled about the ward at night on his hands and knees, prowling about the beds. There were neither convulsions nor vomiting. Tremor was not observed. Coma supervened, and death soon followed.

On opening the skull, the dura mater was found to be externally normal in appearance. A considerable quantity of serous fluid escaped on opening this membrane. Beneath it, overlaying the whole upper surface of the cerebral hemispheres, there was found symmetrically disposed in the two sides a thick oblong layer of organized effusion, firm, with smooth rounded edges. This layer was slightly adherent to the dura mater; more firmly so on the right side, and especially near the median line. It simply rested upon the arachnoid, to which it was not adherent. Its thickness was uniform on the right side, measuring about two to three lines, but on the left side it gradually increased from behind forward, reaching near the anterior border, where it covered the anterior lobes, a thickness of one-half inch. In this region there was a small cyst filled with turbid brownish fluid. This membranous new growth was translucent in its thinnest parts, of a yellowish-brown color when fresh, and deeply pigmented at points, presenting a mottled appearance.

The visceral arachnoid was slightly opaque; the vessels of the pia mater were deeply injected. The weight of the brain, together with these masses, was forty-nine ounces.

Liver small. Kidneys contracted.

January 27th, 1876.

5. *A case of hemorrhage into the ventricles of the brain in an infant child of six months.*

By DR. CHARLES WINSLOW DULLES.

A. W., æt. 6 months, was born in the Philadelphia Hospital, taken out by her mother, deserted, and brought back March 31st, 1876. She had at this time some bruises upon the right side of her face; her legs were flexed upon her buttocks, and her hands doubled over her head. The buttocks were in a condition of irritation not uncommon in very young children.

On the second day a collection of pus was found over the right side of the sacrum; this burst the next day. Subsequent examination showed it to have been subcutaneous and small.

The child had some coryza and some pneumonia of the right lung, which were treated with poultices, and R Ammon. carb., potassii chlor., āā 3j; tr. ferri chlor., f 3j; syruipi, f 3iij, f 3ss t. d. She was restless, but seldom cried. Three days before death the respirations were hurried. This was attributed to the pneumonia. On April 11th, she died. The next day I made a *post-mortem* examination and found the liver and both kidneys fatty; in the lower lobe of right lung some consolidation; the bronchi containing catarrhal deposit; the heart and other organs healthy.

On removing the calvaria, the membranes of the brain were found congested but not inflamed; a small amount of effusion over the pia mater, with some opalescence of the membrane. The brain was divided equatorially at the level of lateral ventricles, and these were found filled completely with firm and partly organized clots, entangled with the choroid plexus of each side. Upon cutting through and raising the fornix, there was found below it a large firm clot, filling the third ventricle and forming a cast of it. The brain-substance about each ventricle was deeply stained. At a later time (April 22d), after having hardened the brain with alcohol, I removed the clots with the pons varolii and medulla oblongata and placed them in alcohol again. The rest of the brain was examined carefully and divided into small sections in search of a lesion; but none was found. April 26th, the specimens were floated and examined with great care. I found the clots which had been in the lateral ventricle intimately adherent to and partly covered by the choroid plexus of each side, and that they formed a fair cast of the cavities. The clot in the third ventricle formed a still more accurate cast of it, having the impression of its various irregularities. The fourth ventricle contained a pyramidal clot, filling the lower half and forming a cast of it. This was so accurate as to present a ridge

which fitted into the median fissure, and the clot was prolonged downward for about four lines into the ventricle of the cord. The upper part, or base of the pyramid, was concave.

I could not find the origin of the hemorrhage. It did not seem to have come from any vessels of the brain-substance, but rather from the vessels of the velum interpositum, as the clots were in the cavities into which this penetrates. That in the fourth ventricle was perhaps due to coagulation of blood that ran down through the *iter e tertio ad quartum ventriculum*, since its position and shape might easily have been explained by the law of gravity and the contraction of the fibrin.

In view of this rare condition, I questioned the nurse as to the existence of any of the symptoms attributed to cerebral hemorrhages in children. These, added to those already observed and attributed to coryza and pneumonia,—which, it must be remarked, really existed,—gave the following *ensemble*: respiratory difficulty, dilated pupils, restlessness, rolling of head and eyes, rather stiff position of limbs, occasional tremors.

These symptoms, however, were not sufficiently marked to attract the attention of the nurse, and I never saw any of them except the first. Consequently, the lesion found at the autopsy took me entirely by surprise. The pneumonia found was slight,—so slight that it was only because the autopsy had not at that stage furnished me with a satisfactory explanation of the death that I examined the brain. Had the lung been extensively involved, I should have looked no further, and so missed what was afterwards discovered. On looking over Trousseau, Niemeyer, West, and Meigs and Pepper, I can find record of only ten cases of true cerebral hemorrhage in children, *i.e.*, hemorrhage into the substance of the brain as distinguished from hemorrhage between the membranes. All of these are mentioned by the last-named writers. Eight of them are said to have been observed by Rilliet and Barthez, and two by West.

There is recorded in the *post-mortem* book of the Philadelphia Hospital a case of a child aged ten days, born after a prolonged labor, which had hemorrhage between the membranes and into the substance and ventricles of the brain. The following notes are taken from the book, as recorded by Dr. Jos. Berens:

“Upon the dura were found a few soft, dark clots, amounting in all to about f3i of blood. Beneath the dura, upon the convexity of the brain, were a few very small clots. Upon the base, surrounding the cerebellum, pons, and medulla, was a large effusion of blood, partially coagulated and of a tarry color. The amount of blood was estimated at f3i. There were also many points of subarachnoid extravasation, varying from the size of a

pin's head to that of a silver three-cent piece. There was a moderate sub-arachnoid effusion of cloudy serum, with flattening of the convolutions. The lateral ventricles were filled to the utmost by coagulated blood, very dark in color. In the anterior portion of both corpora striata there was a clot the size of a pea, light in color, and attended with some yellow staining of the neighboring tissue. In addition to these there were scattered points of hemorrhage throughout the brain-substance, gray and white. The brain-substance was congested and oedematous under hydrostatic test.

Cord.—A considerable amount of blood effused on the surface of the dura. Beneath this in the arachnoid space there were also a number of small, soft clots and a quantity of fluid blood.

The peculiarity of the case now reported consists in the age of the clots, the fact that they occupied peculiar situations, and that there was no hemorrhage between the membranes or into the substance of the brain, anywhere.

So far as the diagnosis is concerned, it appears that conditions like this case can be determined only with the greatest difficulty. Meigs and Pepper quote Rilliet and Barthez as saying, "Cerebral symptoms have been observed to exist; but of so unusual a character, and so different from what have been assigned by writers to apoplexy, that they could not lead to a diagnosis of the disease."

April 13th, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, April 27th, 1876.

Report of the Committee on Morbid Growths.

"The brain presented by Dr. Dulles, and referred to the Committee on Morbid Growths, is found so much mutilated by previous dissection, that a complete and satisfactory report is unfortunately not in the power of your committee. Upon examining the external surface of the brain no evidence of any traumatic injury could be found, and there are none of the products of an acute or chronic inflammatory process observable upon any of the membranes. Both the gray and white substance of the brain are normal in consistence, the latter tinged of a red color, particularly in proximity to the lateral ventricles. In the left lateral and third ventricles are found clots of coagulated blood moulded and filling each ventricle; in the right ventricle a very small clot of blood is present; the fourth ventricle was empty. Owing to the condition of the parts, after a minute examination it was not possible to ascertain from what vessel or vessels the hemorrhage had originally occurred.

"A microscopic examination of the arterial vessels at the base of the brain demonstrated nothing abnormal in their structure. The basilar artery contained a clot of unorganized blood extending about a quarter of an inch below its bifurcation."

6. *A fatal case of chorea.*

By DR. JAMES H. HUTCHINSON.

T. A. H., æt. 12, school-boy, admitted into the Pennsylvania Hospital April 23d, 1876. Patient's father and mother are living, and in good health; he has six sisters and one brother, all of whom are younger than himself, and healthy.

Until last October, patient had enjoyed unusual health; at that time he awoke one night with violent pain in the back of his head, and high fever; this attack only lasted one day, and his accustomed health returned, but he was not allowed to attend school for two weeks. Very soon after returning to school, he again had headache, which lasted several days. About two months ago he fell and bruised his right elbow and knee, and after this he had pain in his right wrist, and also in some of his other joints, which his physician ascribed to "rheumatism." Two weeks ago last Tuesday (4th), the pain in the wrist became more severe, and choreic movements made their appearance in this part, so that patient was unable to write; upon the next day choreic movements were noticed in the right leg; this gradually increased, and in one week his articulation became affected. On the 13th, the disease had involved the left arm; but up to this time his appetite and spirits remained unimpaired. On the 16th, patient complained of pain in his head and back, and pressure on the spine caused him to cry out with pain. On the 20th, the pain in his back became much more severe, and the choreic movements were so marked that he could not stand, and had to be confined to bed, where he has remained until admission, the symptoms becoming gradually more pronounced.

On admission, patient is violently convulsed, so much so that it is impossible to confine him to bed without tying him there, and he is utterly unable to speak intelligibly; his temperature is $102\frac{1}{4}^{\circ}$, but his pulse cannot be counted. Pupils contracted. Ordered pot. bromid., gr. xx, and liq. pot. arsenit., gtt. iij, t. d.

P.M. Somewhat quieter. Temp. 101° , pulse 112, respiration 18. Bromide ordered again, and Epsom salts, $\mathfrak{z}\text{ij}$, as his bowels have not been opened for some days.

April 24th.—Slept a portion of last night, but during sleep there was some twitching about the mouth.

This morning patient is not so convulsed, but every muscle in the body is affected, and apparently most upon the left side; and as he lies upon the bed, the body is bent slightly, with concavity towards the right. His tongue, which is protruded involuntarily, is pushed somewhat to the right. His pupils are a little more dilated than yesterday. Bowels opened freely by salts. Urine passed in bed, therefore none could be collected for examination. Convulsions are still so severe that restraint is necessary. Some cyanosis. Auscultation reveals a systolic apex-murmur. Ordered liq. pot. arsenit., gtt. iv, t. d., and bromide only at night.

At nine P.M. pot. bromid., gr. xxx, ordered, and again at twelve M., with some effect, but not much. During the day small quantities of milk have been administered at short intervals. Articulation more distinct this P.M.

April 25th.—Early this morning vomited milk, and died at four A.M.

It has since been ascertained that his father has had frequent attacks of "rheumatic pains;" and his mother, "rheumatism of the feet." His sister has had several very severe attacks of rheumatism, and has had endocarditis.

Autopsy, thirty-two hours after death.—Rigor mortis slightly marked. About f3i of bloody serum in lower part of peritoneal cavity; peritoneum dry, sticky, and covered in a few points with lymph.

Lungs free from adhesions, pale anteriorly, congested posteriorly, but crepitant throughout. In anterior part of left lung there was a small, firm, yellowish nodule, and in its centre a spot of calcareous degeneration. At the root of lung one or two glands were found in the same condition. Thymus gland remains.

Pericardium contains f3ii of clear serum; no appearance of inflammation.

Heart.—Weight, 5½ oz.; left side contracted, right flaccid; auricles filled with clots, and vessels at base also contain some fibrinous clots. Aortic valves incompetent, leaflets swollen and softened; transparency lost, especially at line of contact. Aorta slightly atheromatous above sinus of Valsalva. Pulmonary valves competent. Tricuspid valve normal; allows a No. xi. ball to pass. Mitral valve passes a No. vi. ball; on auricular side of leaflets a line of papillary vegetations existed, but there was no thickening except at border.

Liver.—Weight, 2 lbs. 2½ oz.; consistence firmer than usual; upon upper surface, a few irregular whitish spots.

Gall-bladder full of bile.

Spleen.—Weight, $2\frac{1}{2}$ oz.; rather firm, but tissue normal.

Pancreas normal.

Mesenteric glands enlarged; paler than usual, but not softened.

Kidneys were not congested; capsule removing normally, leaving a smooth surface; weight, $3\frac{1}{2}$ and $4\frac{1}{2}$ oz.

Supra-renal capsules normal.

Scalp not congested; calvaria congested and thin anteriorly, and on the right side posteriorly.

Brain.—No adhesions of dura mater, which is smooth, but considerably congested. Convolutions normally rounded. Arachnoid in places quite opaque (especially at base); some subarachnoid effusion. Vessels of pia mater full of thick fluid blood, especially posteriorly. Lateral sinuses full of dark fluid blood and fibrinous clots. Longitudinal sinus also contains a clot, and, at highest point of curvature, a small spicule of calcareous matter. Middle lobes of brain rather soft. Vessels composing circle of Willis contain no clots, and their walls are not thickened, but they are filled with dark thick blood. Gray matter of brain pinkish in color; white substance shows numerous vascular points. Ventricles contain a little bloody serum. Left choroid plexus is slightly granular anteriorly, while the right is rather more congested than the left. The left ependyma is normal; veins of corpus striatum are full. Ependyma of right ventricle is discolored and yellowish-white. Septum lucidum is firm. Third ventricle contains bloody serum. Fourth ventricle appears normal. Cerebellum normal.

The cord.—Between the third and fifth dorsal nerves the cord is very much softened (about one inch). The dorsal portion of cord is normal with this exception; cervical portion also normal. The lower part, however, is hardened.

May 11th, 1876.

Dr. S. Weir Mitchell thought the specimens too unusual to pass without remarks, and wished to ask two questions. 1. Was the chorea on one side, or both? 2. What was the relation between the suspected capillary embolism and the side affected? in what part of the brain were the capillaries affected?

Dr. Hutchinson, in answer to the first question, said that, although the history showed that the choreic movements had appeared first upon the right side, at the time the patient came under his observation the two sides were equally affected.

Dr. Longstreth replied to the second question, that vessels taken from the corpora striata alone were examined microscopically. They were

drawn out of the brain-tissue by seizing at a "blood-point." The large vessel (arteriole), seized and drawn out, contained fluid blood, *i.e.*, blood-corpuscles floating in serum; in the capillary branches was seen clotted blood, *i.e.*, the blood-corpuscles could not be made to float. This process of examination did not allow of any exact determination of the depth to which the clot extended in the vessel.

Dr. Mitchell then desired to know whether this condition of the vessels was unusual.

Dr. Longstreth thought that it presented an appearance different from what he had usually seen. Certainly some of the vessels were "plugged," and by needle manipulation these clots could be "fractured" and separated, leaving clefts in the mass within the vessel. This is certainly unusual behavior for recent (*post-mortem*) clot; the *post-mortem* clot being more likely to dissolve and wash away by floating off the corpuscles, just as occurred in the larger vessels. These clots, whatever may have been their origin, were certainly of no great age; they had not lost color to any very marked degree, but, nevertheless, were lighter in color than the fluid portions of blood. Some of the capillaries contained a clot at the distal portion, with fluid blood behind it, towards their junction with the arteriole from which they were given off. A certain number of capillaries contained clots, others contained fluid blood alone. The proportion of plugged to unplugged seemed about as follows: in some cases two to one, in others one to four. Dr. L. was, therefore, led to the conclusion that there was a distinction to be drawn between the state of the blood in some vessels and that in others. He had parts of the brain hardening (Müller's fluid), with a view to making section for their more perfect examination. The capillaries of no other parts of the brain than the portions mentioned were examined.

Dr. Mitchell inquired the size of the vegetations on the valves of the heart, and whether any were recent, and if any still remained of a size fitted to become emboli in the lesser vessels of the brain.

Dr. Hutchinson replied that the average size of the vegetations on the mitral valve was about that of a pin's head. More of them were certainly too large to find their way so far as to the smaller vessels of the brain, and they were all unquestionably the result of recent inflammation.

Dr. Longstreth said he had met the statement, but could not now recall its source, that emboli derived from vegetations on the mitral orifice were smaller than those coming from a similar condition of the aortic valve. The explanation offered was that, having a greater distance to travel, and also from the fact of being within the cavity of the ventricle during at

least one contraction of the muscular wall of the heart, the emboli of mitral origin were more likely to be broken into very small fragments than those of aortic origin.

Dr. James Tyson said he had been impressed, in examinations of the brain, with the almost universal presence of blood in the capillaries; indeed, they seemed always full of blood; and on this account he had found few better sources for the study of capillary structure than portions of brain, for in them capillaries could always be demonstrated, because thus filled. He thought also that the method pursued by Dr. Longstreth for obtaining capillaries for examination was a very unreliable one, as in drawing out vessels from the brain they would be torn across long before the capillary size was reached; arterioles would thus be obtained, but, he feared, not capillaries.

Dr. Longstreth was confident that capillaries could be thus obtained, while at the same time he did not consider the results of the examination by any means perfected.

Dr. Tyson did not wish to be understood as denying the possibility of thus obtaining capillaries. He had never tested it; it simply seemed to him an uncertain method.

Dr. Hutchinson called attention to some other points in the history of the case, which had not been alluded to in the discussion. Among these was severe headache, which had appeared some time before the beginning of the attack of chorea, and which had been so violent as to necessitate the boy's withdrawal from school. This, taken in connection with the fact that the longitudinal sinus contained a small spicula of calcareous matter, seemed to indicate the existence of cerebral disease for some time before any disordered movements were observed. He said also that the theory which attributed the symptoms of chorea to plugging of the smaller vessels of the brain was, in his opinion, very far from proved. All that could be positively asserted at the present time was that vegetations upon the mitral valve are very frequently found in the bodies of those who have died of chorea. In these cases it may be true that the irregular movements are due to the irritation caused by the emboli, but it is obvious that another explanation must be sought for those cases in which no vegetations are found. Moreover, in most of the cases of cerebral embolism on record, we have no history of choreic movements. He was inclined to think, with Dr. Ogle, that if it is true that such plugging is a cause of chorea, the movements would continue during sleep, since in this case there could be no remission of the irritation upon which they depend. It is difficult upon this theory to explain those cases in which there is an abrupt cessa-

tion of the disordered movements, either as the result of treatment or for some other reason.

Dr. Mitchell had no doubt that there was a chorea from minute arterial embolism, and that it sometimes arose from thrombosis. He had seen a gentleman who, having had syphilis several years before, had right hemiplegia and aphasia. He became entirely well, and the next summer had suddenly left unilateral chorea, followed by mental disturbances of very unusual nature. They became entirely well under anti-syphilitic treatment in less than six weeks; and this was, he believed, a case of thrombosis, and one of great rarity.

There are also choreas which are of reflex origin, and Dr. Mitchell has seen three cases arising from peripheral injuries. Was it likely that the immediate pathogenesis was the same in all? Moreover, chorea Dr. M. believed to be divisible into three species: The ordinary form, in which there were first awkward voluntary movements, the disorder increasing, and at last also irregular automatic motions. A second form was more rare. In it, the voluntary motions remaining perfectly good, there were perpetual unrest and automatic activity, stilled at once during a willed act. The third species is characterized by absence of automatic activity and by choreic disturbance of all volitional acts. These latter cases are sometimes congenital and sometimes are post-paralytic. It may well be suspected that different pathological states, or at least degrees of such states, occasion these varied forms. He recalled but one fatal case of chorea. This occurred in a woman three months pregnant. The attack was excited in consequence of her brother's drawing a "jig-saw" through a piece of parchment in the vicinity of her ear. She was much frightened, and within five minutes exhibited choreic movements of the right side and of a very violent character, which at length became generalized.

Dr. F. P. Henry thought the effect of treatment here, as elsewhere, has a bearing on the pathology of the disease. The discussion tended towards proving that the symptoms in this case depended upon irritation somewhere in the motor tract. Such an irritation would give rise to a double train of symptoms; first, convulsions, and secondly would cause contraction of the unstriated muscular fibres of the blood-vessels, through the vasomotor system of nerves, which contraction may be supposed to interfere with muscular action. The treatment to which he alluded has for its object the dilatation of the walls of the blood-vessels by nitrite of amyl. During his late term of service at the Episcopal Hospital, he had seen a number of cases treated in this manner. Among these were some exhibiting the cold stage of intermittent fever, some of epilepsy, and six cases

of chorea. The treatment was very carefully carried out by his resident physician, Dr. Ziegler, who suggested this method of treatment in chorea. All of the cases of chorea but one were cured in a very short space of time, and in all marked improvement dated from the first inhalation. It would be anticipating Dr. Ziegler's paper to give further details.

Dr. Longstreth said if Dr. Henry referred to what was ordinarily spoken of as the motor tract,—i.e., the conducting fibres,—he did not think we ought to expect to find changes in it. We should rather expect to find changes, if anywhere, in areas of gray matter on the surface of the convolutions, or in the gray matter of the ganglia whence are derived the nerve-fibres which go to make up the motor tracts. According to Hughlings Jackson, the changes in brain-matter which have as symptoms convulsive movements are those affecting the cells, and the changes are of such nature as not to destroy the integrity of the individual cell, but to irritate it and render it liable to irregular and involuntary "discharges" of nerve-force, thereby producing convulsive action of the muscle-groups connected with the areas of "irritated" nerve-cells. And it is here in the brain-cells, therefore, that we are to look for the changes in the cases of choreic movements, and not in the motor tract itself. The "irritation" of these brain-cells may on the one hand be due to excessive vitality corresponding with states of local or general congestion, and, therefore, over-nutrition of these cells from superabundant nutrition; or, on the other hand, to anæmia and depressed vitality.

Dr. Henry said he used the term "motor tract" in its most comprehensive sense, including under it those portions of the nervous system in which motor impulses originate, as well as those through which they are conducted.

Dr. Longstreth said, in reference to remarks of Dr. Hutchinson on embolism resulting from valvular disease, that where large vessels of the cerebral circulation were occluded, he did not think we ought to expect choreic movements to result. It would be rather in cases where a portion of the capillaries were plugged, whereby *portions* of areas of brain-cells connected with a given muscular group—e.g., the flexors of the fore-arm—were deprived of blood, and, therefore, function abnormally, whilst the other brain-cells for the identical group, receiving their normal supply of blood by means of the other unobstructed capillaries of the same area, function normally; whereas in plugging of a large vessel—e.g., the middle cerebral artery—the whole of the area supplied by that vessel would be cut off from its blood-supply, and we should have resulting the phenomena of paralysis.

Dr. Hutchinson reminded Dr. Longstreth that in some of the cases claimed to be of embolic origin, plugging of the larger vessels rather than of the capillaries was intended.

Dr. John Ashhurst, Jr., said that another objection to the embolic theory was the localization of the lesions. Capillary cerebral *thrombosis* could of course be understood; and pathologists were, on the other hand, familiar with the effects of general capillary *embolism* from cardiac disease (*arterial pyæmia*), in cases such as one reported to the Society some years since by the President. But why capillary embolism from cardiac disease should in one instance produce chorea, and in another instance arterial pyæmia with no chorea, did not appear.

Dr. Longstreth desired to call attention to one or two whitish spots seen on the surface of the liver, when removed from the body, which were found on microscopical examination to be due to fatty change (degeneration) of the liver-cells, possibly caused by embolism. Now, with regard to the election of the site for plugging, when dealing with exceedingly minute particles detached from the valves, such as must be necessarily supposed to exist in these cases, the brain must be given the preference, with its minute capillaries measuring .0068—.0065 mm. The liver-capillaries come next,—.0090—.0026 mm. All other capillary net-work of the body would allow emboli of this size to pass and be returned to the general circulation.

Dr. Mitchell called attention to another curious fact: that in severe cases of chorea we are apt to have unilateral palsy. One would expect cases of this kind to be more apt to be associated with embolic changes. But in examining a large number of cases with this point in view, he was unable to find any association of the unilateral palsy, thus occurring, with heart-lesions.

Dr. Hutchinson said Dr. Ashhurst's objection to the theory has much force, but it is a fact that emboli are more apt to be found in certain organs than in others, the spleen being the most common seat.

Dr. C. B. Nancrede thought the more frequent occurrence of emboli in certain situations was easily explained by the peculiarities of the capillary system in different organs. In the spleen there are really no capillaries, while the movement of the blood is very sluggish, and, therefore, likely to encourage embolism. In the kidney, as is well known, there are really two capillary circulations, tending greatly to slow the circulation; and the same may be said in a less degree of the liver.

Dr. J. Ewing Mears referred to a case which occurred while he was a resident physician at the Philadelphia Hospital,—a case of unilateral chorea, following criminal abortion practised upon a young girl, who died

sixteen months later. He was informed that the *post-mortem* examination revealed sclerosis of the anterior columns of the cord. He thought the choreic movements were temporarily diminished by sulphate of zinc, which was given in gradually increasing doses until from twelve to thirteen grains were given three times a day. The case was also under the care of Dr. Pepper.

Dr. Wm. Pepper hesitated to say anything where so much had already been said, but one or two points of interest strongly suggested themselves. He had himself seen three fatal cases of chorea, one of puerperal chorea at the Preston Retreat, one in connection with a fracture of the humerus, and the third the case already alluded to by Dr. Mears. The last was a very chronic case, in which there was subsequently found chronic spinal meningitis associated with slight cortical sclerosis of the cord. No treatment was of any permanent avail.

In the case which occurred at the Preston Retreat, there were minute vegetations on the mitral leaflets, but no positive evidence of plugging of any cerebral vessels was found, though the examination was not so minute as it should have been. In the case complicated with fracture of the humerus (reported in vol. ii. of the Pennsylvania Hospital Reports), there was distinct plugging of minute cerebral vessels.

While, however, it seems that the evidence is sufficiently strong to make it probable that such embolism occasionally serves as the cause of chorea, it is evident that it is only one of numerous pathological conditions which may appear in connection with that complex disease. Indeed, it seems necessary to recognize that the choreic muscular movements are symptomatic merely of a certain disturbed condition of the cerebro-spinal motor tract; that this abnormal state may be brought about by various organic or functional influences; and that according to the region chiefly affected, and the degree of the disturbance, will be the character of the resulting chorea.

As to what has been said about the character of the vegetations, it is to be remembered that in acute endocarditis the mitral valve is most frequently affected, while the aortic leaflets are most frequently the seat of chronic lesions. Now, it is precisely in acute endocarditis that the vegetations, being soft and tender, would most readily be detached in minute fragments; and it seems likely that the circumstance that the capillary embolism which is held to cause chorea occurs in connection with acute mitral endocarditis, is due to the above reason, rather than to the fact that the fragments of fibrin pass through the ventricle before entering the aorta.



The case alluded to by Dr. Ashhurst was a remarkable one. The patient had been thought to have cardiac disease associated with pulmonary phthisis. But at the autopsy there were found extensive aortic and mitral disease, old apoplexy of lungs, with chronic catarrh and embolism of spleen, kidneys, and mesenteric vessels. The latter illustrated what has since been described by Ponfick, the origin of aneurisms from embolism, while in the spleen some of the embolic patches have undergone fatty softening and led to a decomposing puriform fluid, from which septic infection of the system had ensued.

Dr. James C. Wilson called attention to the high degree of localized softening of the cord, which seemed to have been overlooked in the discussion. He thought the fact of the annular constriction was one of importance, especially as the case was one of short duration. He asked Dr. Mitchell whether he did not think it was possible there might be some relation between the chorea and the condition in question.

Dr. Mitchell replied that he should hardly think there would be, although some French pathologists think that chorea is due to disease of the cord, because in dogs with choreoid movement section of the cord in the neck does not arrest the spasms. But he did not think that the choreoid condition of these dogs at all resembles that of chorea, but rather that in which a group of muscles is affected, as in the cervical spasms seen in adults.

Dr. Pepper said another lesion of interest here is the incipient peritonitis. It is striking that there should be found general dryness, some effusion, and lymph, and suggests the question whether extensive plugging of the capillaries of this serous membrane might cause this.

Dr. Hutchinson said this presented quite a remarkable appearance, so that when the abdomen was first opened he thought there was peritonitis. He also asked why girls should suffer from chorea in greater proportion than boys, if this were caused by plugging of the smaller vessels, the indirect but nevertheless the real cause of the embolism, rheumatism, being so much more common in the other.

Dr. Mitchell thought it was simply because the female brain was more excitable; and, while he did not accept the theory of capillary embolism as explaining all cases, he thought the fact that women are more frequently the subjects of chorea than men did not of logical necessity exclude emboli.

Dr. Pepper reminded Dr. Hutchinson that statistics showed that the disease occurred indifferently in both sexes. He thought, also, that fatal cases, even including puerperal cases, did not include more females than males.

VII.—ORGANS OF SPECIAL SENSE.

Foreign body removed from the upper wall of the external auditory canal.

By DR. CHARLES H. BURNETT.

This foreign body was removed from the upper wall of the right external auditory passage of a Scotchman, 35 years old.

The symptom complained of, and for which he sought relief, was an intense pounding noise in the ear, which caused him much annoyance, and brought on frequent headaches and attacks of dizziness. In the affected ear the watch was heard only in contact with the auricle. His aural symptoms, which had become especially annoying to him within several years, had led him to pick at his right ear, from which he had now and then brought small pieces of something which he stated had an offensive odor. He was entirely unsuspicious of the presence of a foreign object in his ear.

The examination of the ear revealed an apparently free auditory canal, but a very much thickened and irritated membrana tympani, and that part of the fundus of the auditory canal included in the membrana flaccida and the inner part of the upper wall of the canal seemed more hollowed out than usual. Upon inflating the tympanic cavity, the membrana moved outwardly, but no air escaped into the external ear, thus showing that there was no perforation in the drum-membrane. Since the general calibre of the auditory canal was free enough to examine thoroughly the entire membrana tympani, the foreign body was not detected immediately, as it was lying in a dome-like elevation of the roof of the canal.

In endeavoring to lift away what was supposed to be a flat scale of cerumen adherent to the upper wall of the external auditory canal, I was surprised to remove a foreign body which looked like a grain of white corn, somewhat hollowed out from its small end inward. From this point the patient had probably picked away the small scales or pieces alluded to above. He knew nothing of the mode of its getting into his ear, as he had never placed any foreign body there himself, nor could he remember that any one else had placed anything there. He could not even suggest

an explanation of its presence in the ear. The foreign body was at no point in contact with the membrana tympani when I examined the ear. At some previous time it might have been, which would help to account for the thickening of the membrane.

The entire roof of the external auditory canal was hollowed out by the long presence of this foreign body. Foreign bodies are often found hidden between the membrana tympani and the antero-inferior wall of the external canal, but I have never found a foreign substance hidden in an elevation of the roof of the canal.

Upon the removal of the foreign body from the ear the pounding noise ceased, and the disagreeable head-symptoms disappeared. The man reported himself at the infirmary several times afterwards, and I was satisfied the improvement in his case was permanent. The hearing was not markedly improved by the removal of the foreign substance. What the foreign body really is I cannot say; after its removal I placed it in water for twenty-four hours, and the small amount of cerumen attached to it melted off and stained the water: the outside white covering assumed the everted appearance you here see, and what may be called its contents are here floating about with this swollen but insoluble granular appearance. The hull is in glycerin and water; its contents in a solution of chloral hydrate (f3j-3x).

I would esteem it a favor if the Committee on Morbid Growths would throw light upon the true nature of this foreign substance.

February 24th, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, March 9th, 1876.

Report of the Committee on Morbid Growths:

"Your committee find that the outer or capsular portion of the foreign body removed from the ear and presented by Dr. Charles H. Burnett is composed of numerous layers of tessellated epithelium, in which the nuclei are distinctly visible. The inner or central portion is made up of oval cells without nuclei, resembling those found in the parenchyma of various kinds of grain, and indeed of seeds generally. As no structural characteristics remain, however, it is manifestly impossible to designate the nature or origin of this offending substance."

VIII.—TUMORS NOT OTHERWISE CLASSIFIABLE.

1. *Epithelioma*.

By DR. A. F. MÜLLER.

The tumor was removed on November 11th, from Mrs. W., and was situated about midway between the lower border of the ribs and the anterior superior spinous process of the ilium on the left side. It had been noticed for about a year, and latterly had given rise to severe lancinating and shooting pains, especially severe in the left arm. It was perfectly movable when grasped in a fold of the skin, but reached down to the sheath of the external oblique muscle, some of whose fibres were removed in excising the tumor. There was on its centre an irregularly-shaped raised line which seemed to threaten ulceration.

There is no history of cancer in the family, they being unusually long-lived; the woman's great-grandfather having lived to be one hundred and ten years, and her father being now over ninety years old. On her mother's side there is also no reason to suppose any hereditary tendency to cancer. No glandular enlargement anywhere. *November 11th, 1875.*

The specimen was referred to the *Committee on Morbid Growths*, which reported, December 9th, 1875.

Report of the Committee on Morbid Growths:

"The tumor presented by Dr. Müller has numerous club-shaped tubuli situated mostly in the deeper layers of the cutis. These tubuli are filled with abnormally large epithelial cells containing nuclei seen in all possible stages of segmentation, with double and multiple nucleoli. Often the strikingly large nucleus has been developed at the expense of the substance of the cell, and appears like a vesicular, completely transparent formation, which, when the nucleolus has also finally disappeared, gives the cell an appearance as though a hole had been punched out of it. Although no epithelial pearls are present in the growth, your committee would, nevertheless, designate it an *epithelioma*, especially as there is an

absence of any epithelial infiltration of the surrounding connective tissue beyond that of the ingrowing tubuli."

2. *Peculiar new formation in the sterno-cleido-mastoid muscle of a new-born child.*

By DR. W. H. WINSLOW.

Dr. Winslow asked for information with reference to this growth seen in a newly-born child. It was two and a half inches long and three-quarters of an inch in diameter, cylindrical in shape, with ends slightly rounded. It was very hard, like cartilage, and could be separated somewhat from the surrounding tissues by pressing the fingers in deeply. There were no symptoms of inflammation, or other abnormal manifestations, connected with it. It was situated longitudinally along the anterior border of the left sterno-cleido-mastoid muscle, and was at first supposed to be connected with its sheath and that of the vessels beneath.

No treatment was instituted, and it gradually disappeared, until at the end of the third month no sign of its presence remained. The mother had received no injury during pregnancy; the labor was a normal and easy one, and the child was received tenderly and carefully. The mother is slightly scrofulous, but enjoys good enough health, and has two other children living and hearty. The father is a tough Scotchman, in perfect health, and there are no possibilities of a syphilitic taint in the family. The baby is now fat and hearty, and the left sterno-cleido-mastoid is as well developed and as functionally active as the right.

Dr. Ashhurst said that the two most plausible theories which had been advanced to account for these indurations of the sterno-cleido-mastoid muscle were (1) that the condition resulted from an injury sustained in birth; and (2) that it was a lesion of congenital syphilis. He thought the latter the more probable explanation in the present case, on account of the unusual persistence of the induration.

Dr. Horace Williams said that within the past year he had had two such cases, and had been at a loss to account for them. Both were primiparous labors, one a breech-presentation, child born rapidly, although the mother was forty-three years old. The second was a primipara also, thirty-nine years old, and a difficult forceps-case. In the latter case, the swelling was not located over the sterno-cleido-mastoid muscle, but posterior to and below the region of the ear, corresponding very nearly to

the position over which one blade of the forceps must have been. Both of these swellings disappeared, the first in eight weeks, and the second in three. Pot. iod. in lin. sap. comp. was used as a local application; nothing internally. There was no discoloration of the skin in the second case, nor other condition whence it would be possible to infer that the forceps produced it. Subsequent history entirely free from any specific developments.

Dr. Ashhurst said that it was well known that similar indurations of muscle occurred in cases of acquired syphilis, particularly, as pointed out by Ricord, in the biceps. Dr. A. had himself seen such a condition in the pectoralis major, and it was from the analogy of cases of this kind that the explanation had been suggested in the case of new-born children.

November 11th, 1875.

3. *Epithelioma of the leg; amputation.*

By DR. W. S. WOLFORD.

The wound from which the trouble arose was inflicted eleven years ago. It has caused the patient a great deal of trouble, as nothing seemed to produce a tendency in it to heal, and the drain from it kept him weak, though he was able to attend to his business, which was flour-shipping. The pain, though annoying, was never violent until within a year past, when it grew gradually worse and worse, and was surely bringing the man to his death. Amputation was deemed necessary to save his life, both on account of the pain and the nature of the disease, which was supposed to be epithelioma. The bone, on dissection after amputation, was found denuded of periosteum, and slightly involved in the region of the ulceration. The patient is doing well. December 9th, 1875.

The specimen was referred to the *Committee on Morbid Growths*, which reported, December 23d, 1875.

Report of the Committee on Morbid Growths:

"The tumor of the leg, presented by Dr. Wolford at the last meeting, is an *epithelioma*, with numerous concentrically laminated epithelial bodies, the so-called epithelial pearls."

4. *Alveolar pigmented sarcoma from the back.*

By DR. JOHN H. PACKARD.

The tumor was removed from the back, between the shoulders, of a girl, æt. 21, a patient at the Episcopal Hospital. It was button-shaped, about two inches in diameter, and an inch and a half in thickness. It was attached by a pedicle about three-fourths of an inch in thickness.

She stated that she had had a little wart-like growth there ever since she could remember; about a year ago it was accidentally bruised, and since that time its growth had been rapid. Once or twice she had struck it, and it had bled very freely. It was readily shaved off with a bistoury, and the wound had healed without special trouble.

December 9th, 1875.

The specimen was referred to the *Committee on Morbid Growths*, which reported, January 8th, 1876.

Report of the Committee on Morbid Growths:

"Dr. Packard's tumor is a *pigmented sarcoma*. Microscopically it presents large epithelioid cells, many of which are of a brownish-red color, from the presence of minute granular pigment; all of them contain a large shining nucleus. The intercellular tissue is of a hyaline structure, but in many places the cells are so closely packed in large meshes as to resemble an alveolar arrangement. Here the stroma is composed of nucleated spindle-cells, many of which are also pigmented. A portion of the coloration is also due to hemorrhagic extravasations, and there are not a few territories of the growth which are entirely free of any coloring-matter. The tumor is attached to a fibrous pedicle, and is covered with a cortical layer; it can properly be placed among the recently-described *sarcoma alveolare pigmentatum*."

5. *Lipomatous myxoma.*

By DR. ALFRED WHELAN.

F. B., a negro, æt. 37, was admitted into the surgical wards of the Philadelphia Hospital, during the first part of December, 1875, for a tumor of the calf of the leg.

He stated that he first noticed an enlargement in the region of the

ankle about a year ago, since which time it had rapidly increased in size until the time of his admittance. He had never received an injury in that location, and could assign no cause for its origin.

The tumor was diagnosed to be a myxo-sarcoma.

An operation for the extirpation of the tumor was performed on December 22d, by Dr. J. H. Brinton, when it was found that it rested upon the deep-seated muscles of the leg. The tumor was in the situation of the soleus muscle, which appeared to be entirely absent.

A few fibres of the gastrocnemius were found frayed out over the surface of the tumor, which was surrounded by an immense plexus of dilated and tortuous veins.

The patient was suffering from stricture of the urethra and secondary syphilis.

December 23d, 1875.

The specimen was referred to the *Committee on Morbid Growths*, which reported, January 13th, 1876.

Report of the Committee on Morbid Growths:

"Your committee find, upon microscopic examination, that the more translucent, gelatinous nodules of the tumor presented by Dr. Whelan are composed of a true myxomatous tissue. Anastomosing stellate cells are rather sparsely imbedded in a perfectly hyaline matrix, which grows cloudy upon the addition of acids, and responds to the tests for mucine. Most of the stellate cells contain but a single nucleus, their number greatly increases in the more opaque, yellowish-white nodules of the growth. Here already begin to appear many free oil-globules and fat-cells.

"In the firm, decidedly yellow, and quite large lumps of the growth, a purely lipomatous structure is seen, presenting all the features of a simple adipose tissue. These lipomatous portions constitute but a relatively small part of the growth: we would, therefore, designate the tumor as a *myxoma lipomatodes*."

6. *Enchondroma of the nasal septum.*

By DR. JOHN ASHHURST, JR.

This specimen was removed from a young man of 18, on February 1st, 1876. The left nostril was almost entirely occluded by a solid growth, and the expansion of the nasal bones was already so far advanced as to produce the characteristic deformity known as "frog-face." The tumor

had existed as long as the patient could remember, but the disfigurement had only become sufficient within the last six months to make him anxious for the removal of the disease. The mucous membrane covering the tumor having been divided, the whole mass was removed piecemeal through the nostril by means of a probe-pointed knife and gouge. The growth had a broad attachment to the cartilaginous septum in part and to the vomer posteriorly, and in its undivided condition was of the size of a hickory-nut. A microscopic examination of the tumor, kindly made by Dr. Nancrede, showed, as had been anticipated, that the growth was an enchondroma. The result of the operation was perfectly satisfactory.

February 10th, 1876.

7. *Papilloma of the hand.*

By DR. JOHN ASHHURST, JR.

This specimen, which was removed by excision from the ulnar side of the hand of a female child, was chiefly interesting as being an example of the form of papilloma called by Billroth "horny excrescence," which, as was well known, was more apt to occur on the face or scalp, and in advanced life, while the common wart was oftener seen on the hand and in young persons. The growth was of a dark brown, almost black color, but this was probably due to the occurrence of interstitial hemorrhage rather than to the presence of true pigmentation. The wound left by the operation healed by granulation.

February 10th, 1876.

8. *Lymphoma of the submental-region.*

By DR. JOHN ASHHURST, JR.

This tumor was removed on the same day as the preceding specimen, August 5th, 1875, from a young woman 20 years of age. The growth had existed about a year and a half, and more than one attempt had been made to remove it,—these attempts, however, having apparently accomplished nothing more than the evacuation of a cyst which occupied the lower portion of the mass. The tumor was removed by means of a single, straight incision, and the specimen submitted to Dr. Bertolet, who, on September 30th, reported that "The tumor from the submental region presents the characters of a lymphoma. Its central portions have under-

gone caseation, and contain naught but pus-corpuseles and granular débris." The patient recovered rapidly.

February 10th, 1876.

9. *Melanotic growth from the groin.*

By DR. JOHN ASHHURST, JR.

This specimen was removed from a young girl of 16, the growth having been of congenital origin; at first appearing as a "red spot" (probably an ordinary mole or *nævus maternus*), but at the age of 13 having become prominent and the seat of a discharge. The tumor was of a dark-brown color, and presented a peculiar warty or papillomatous appearance. It involved the skin only, and was removed by an elliptical incision. The progress of the case, since the operation, has been perfectly satisfactory. Dr. Nancrede has been so kind as to make a microscopic examination of the growth, and reports it to be distinctly epitheliomatous in character. The specimen is interesting as illustrating the development of malignant disease in the seat of an innocent growth of long standing.

February 10th, 1876.

10. *Tumor of the back and left shoulder; another in the right lung,—both recurring within a month after removal of an epithelioma from the left side.*

By DR. A. F. MÜLLER, for DR. R. W. DEEVER, who furnished the following history:

"The patient, Mrs. W., æt. 51, came under my care April 28th, 1876, though I had seen her several times with Dr. Müller as early as November, 1875, when Dr. M. removed from her left side a tumor, which your committee pronounced an epithelioma. The wound healed kindly and promptly, and, whilst the pain in the side was removed, she complained of pain in the right lung, from the clavicle as low down as the nipple. Some time about December 1st she began to complain of pain in the right shoulder, and examination revealed a hard, smooth swelling between the shoulders. This continued enlarging to near the time of her death, and the pain only ceased some two weeks before dissolution, the pain in the right chest having subsided some ten days earlier. When I assumed charge of her, in April, she was confined to bed, and had been all winter, and was so weak that no physical examination was made. The slightest pressure gave rise to violent

pain, either on the anterior or posterior portion of the chest, and attempts to raise her up in bed caused alarming dyspnœa. She had little or no appetite, and slept but little, though she was taking thirty-five to forty drops of Battley's solution every three hours, *and could not get along without it*. All efforts to change the opiate or even to use the article prepared by other druggists proved futile. Her bowels were moved regularly every day. She died June 17th.

"Autopsy, twenty-five hours after death.—Rigor mortis well marked. Emaciation extreme. Great muscular atrophy. On opening the abdominal cavity the intestines were found largely distended with gas; some semi-solid fæces in the lower bowel; quite a considerable quantity of serous effusion in the peritoneal cavity (probably two quarts); no evidence of peritoneal inflammation. The line of Dr. Müller's incision in removing the tumor last fall remarkably smooth. The mesentery smooth and transparent; no glandular enlargement anywhere; stomach healthy; spleen normal; liver small and firm; thorax, some sternal adhesions, strongest on right half; the left lung healthy, and pleura smooth, except a few old adhesive bands in posterior and upper part of thorax. There were about two pints of serous effusion in this pleural cavity, and three pints in the right. The right lung was firmly adherent to entire line of third rib and upward; beneath this the lung was free and the pleura smooth. The lung was contracted fully one-half, and contained the round, nodulated tumor seen in the specimen. The pericardial sac contained nearly one-half pint of the same clear serum. Heart apparently healthy, and distended with venous blood. Uterus and ovaries normal, if we except a small cyst the size of a walnut on the right ovary. The surface of the kidneys studded with minute cysts, otherwise healthy. The tumor upon the back extended from an inch and a half on the right side of the spine, about the fourth dorsal vertebra, upward over the left shoulder, nearly to the clavicle, and into the cervical fascia an inch below the ear. Its upper margin was rounded and well defined, whilst the lower border was lost in the inter-spinal muscles. The tumor was so firmly adherent that it could not be torn loose, and had to be cut with the knife; but it did not involve the scapula or ribs."

The specimens were so badly preserved that they could not be referred to the *Committee on Morbid Growths* for microscopic examination.

June 22d, 1876.

IX.—SPECIMENS FROM THE LOWER ANIMALS.

1. *Syngamus trachealis* from the trachea of a chicken.

By DR. R. M. BERTOLET.

Specimens, drawings, and microscopic slides of this entozoon, one of the most remarkable of all animal parasites, are presented, clearly exhibiting the double nature of the worm. The male is found permanently united to the female, and can only be separated by mechanical violence, when a portion of the male worm is generally left behind.

It has been asserted that the embryonal male and female worm are already united in the same ovum. I have made numerous ineffectual attempts to incubate the eggs artificially. I reserve my paper for publication at a later date.

Dr. W. H. Winslow desired to know the evidence upon which it was concluded that the specimen was a union of two individuals which were united in one body, and how the smaller one was known to be a male. He said that as we approach the lower forms of the animal kingdom, to which most parasites belong, we find many anomalies, and soon get into a region of mystery. Even among the cephalopoda of the mollusca we find a very curious departure from ordinary sexual arrangements. In the argonauta one of the tentacles or arms becomes filled by spermatozooids, and then is spontaneously amputated by a constriction at the base, and goes floating away. This was described as a distinct species, and named a hectocotylus. It was found later snugly ensconced within the pallial chamber of the female argonaut, and was then supposed to be the entire male, and it is only lately that the true nature has been discovered.

The specimen presented may be one of the same character,—a male organ united to the female,—or it may be an hermaphroditic animal.

Dr. Bertolet replied that the best evidence of the male sexual character consisted in a pair of testicles situated in the base of the smaller body, which was attached to the larger worm filled with unmistakable oviducts; that the two animals could only be torn apart by rupturing the tissues.

November 11th, 1875.

2. *Bovine phthisis.*

By DR. R. M. BERTOLET.

These specimens are exhibited to the Society in order to afford the members an opportunity of familiarizing themselves with the more important lesions occurring in this disease. The question whether this disease is transmissible by inoculation and by other means upon various unaffected animals, and also possibly to the human species, is the one which most nearly concerns us. Although numerous experiments have been made in this direction, and nearly a unanimous opinion prevails as to the infectiousness of bovine tubercular matter, yet it appears desirable that further investigations be instituted upon this so vital and important a question. I regret to state that the numerous inoculations upon dogs, cats, and rabbits, which I made with fresh matter a few hours after the cow had been killed, all failed. This must not, however, be regarded as negative testimony, for the excessive heat of midsummer and the deficient attention to the confined animals during my enforced absence, as well as the suppurative cellulitis, caused a decimating mortality among the animals operated upon. Under a more favorable combination of circumstances, I have no doubt whatever that I will be able shortly to furnish conclusive proof of the infectious character of bovine tubercle.

The cow from which these specimens were obtained was extremely emaciated before being killed, had great dyspnoea and cough when driven rapidly. The liver, spleen, and kidneys contained numerous yellow tubercles, the size of a pea, seated in the parenchymatous substance. The enveloping capsules of the organs, notably of the spleen, were studded with pearl-like tumors of various sizes. The mesentery, and the diaphragm both upon its pleural and abdominal surfaces, were literally packed with these pedunculated, mostly small-pearl-sized tumors; often several of them have become agglutinated into one large mass, so as to form tumors fully the size of a walnut. Many of these growths contain calcareous depositions, as also do the lymphatic glands; these are all greatly enlarged, the mesenteric glands forming a perfect cordon, many of them exceeding a man's fist in size. The bronchial glands are even more hypertrophied, one of them measuring ten inches in length and between two and three inches in width.

The lungs upon both sides are firmly adherent. A few of the tumors were scattered upon the surface of the pleuræ; most numerous towards the diaphragm. The middle and lower lobes principally contained many in-

durated pneumonic patches; they are surrounded by considerable fibroid thickening of the connective tissue, with more or less extensive calcareous depositions in the same. Many of these caseous centres have broken down, forming large vomicae, containing very offensive purulent masses. The bronchial tubes and tracheal mucous membrane were free from tubercle, merely slightly congested. The free margins of the lobes were highly emphysematous.

The solitary glands of the small intestine, as well as Peyer's patches, were swollen and ulcerated. The heart was apparently healthy, but a few small tubercles were found buried in its muscles beneath the endocardium. No tubercles could be discovered in any other portion of the muscular system. These bovine tubercles may be regarded as an exaggerated form of the human tubercle, for histologically they are identical. We observe in them the same large epithelioid cells, multinuclear giant-cells, and adenoid interstitial substance; the same remarkable absence of nutrient vessels.

The specimens were derived from an animal in Newark, Delaware, where the disease prevailed with a limited yet striking mortality. The first cow affected was an Alderney brought from a distance, and the disease extended from her to the stock of the farmer who had purchased her.

The term "cattle-disease," which has been applied to this affection, of course means nothing. The proper name would be *tuberculosis* or *bovine phthisis*; by the Germans, the name *Perlsucht* has been well applied.

There are one or two points in connection with the epidemic in this locality which have been investigated by the physician of the place, Dr. Henry, which have a striking bearing, if true, on the question of the transmissibility of the disease. Thus, the grandson of the farmer had been brought from the city in a state of perfect health, and he was nourished upon the milk of this Alderney cow as something exceptionally excellent. He soon acquired a serous diarrhoea, and, at the suggestion of Dr. Henry, the supply of milk was taken from another unaffected cow, as this one had already evinced symptoms of ill health; the boy recovered without further treatment, at once. While ill of the disease, some parties of a neighboring city had desired to purchase the affected animals, who afterwards acknowledged that they had intended using the meat for making Bologna sausages.

January 13th, 1876.

3. *Tape-worm from a trout.*

By DR. A. F. MÜLLER.

The tape-worm was taken from a trout,—*Salmo fontinalis*,—and it is not at all uncommon, as I have found as many as four, in the small intestine usually of quite a number of specimens. The fish are fed on “beef-lights;” and this will probably account for the presence of *tænia* in the fish, which were in every instance artificially propagated.

January 13th, 1876.

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